



## JOURNAL

JULY  
1891.

OF THE

MILITARY  
SERVICE  
INSTITUTIONWILLIAM L. HASKIN,  
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sponsible for opinions  
published in the Journal.JAMES C. BUSH,  
Editor Second Part.

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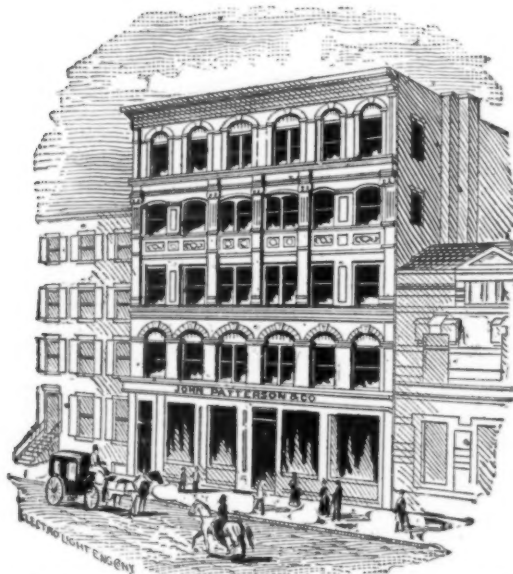
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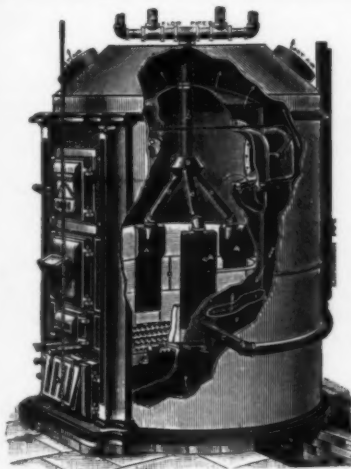
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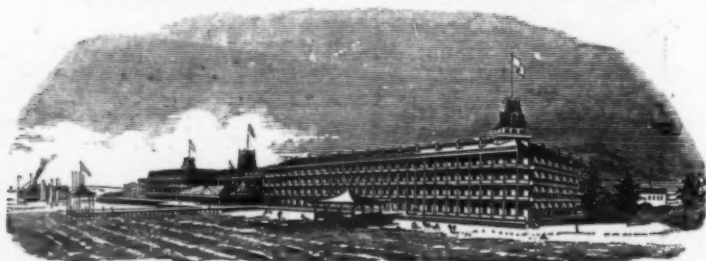
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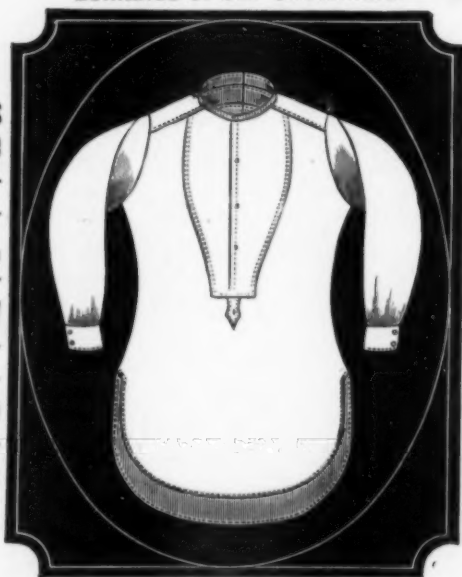
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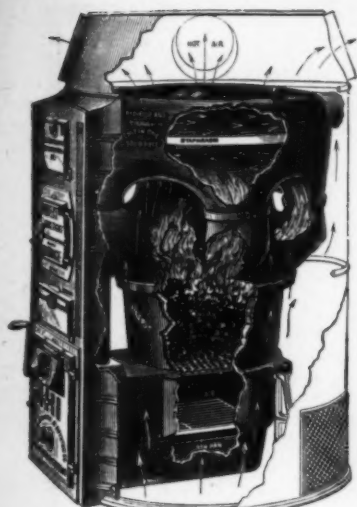
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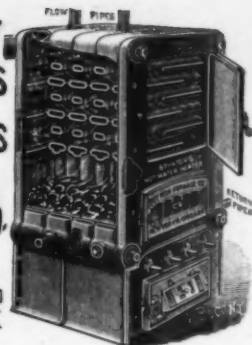
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NO. LII.

THE ARTILLERY SERVICE IN THE WAR OF THE  
REBELLION, 1861-65.

By BVT. BRIG.-GENERAL JOHN C. TIDBALL, U. S. A.

GENERAL HUNT in his able and interesting article entitled "Our Experience in Artillery Administration," published in the April number of the JOURNAL OF THE MILITARY SERVICE INSTITUTION, mentions several vital defects that weighed heavily upon the artillery branch of the service during the late Civil War. As a mere matter of history it would be unprofitable to enlarge upon this topic; but as it is one of great importance in a professional point of view, and especially interesting to the artillery branch, some observations, supplementary to those of General Hunt, going into the details of that which he mentions only in a general way, are here proposed.

In order more fully to understand the character of this service, it is necessary to make some preliminary remarks on the organization of this branch during that period. These remarks will not, however, embrace the first Bull Run campaign; which, taking place so soon after the opening of hostilities, found everything military in a state of newness and without any systematic organization.

The artillery serving with the Union armies was of two distinct kinds, viz.: heavy artillery and field artillery.

The former, when not acting as infantry in the field, garrisoned

fortified places such as Washington and Nashville, and served the artillery with which the works were armed.

At the outbreak of the war, before volunteers were called to the field, all except eight of the forty-eight companies of artillery then in service were acting as foot artillery, either as infantry on the western frontier or as garrisons for forts along the sea-board. The eight excepted companies, two for each of the four regiments, were mounted as light field batteries. Soon, however, nearly all the remaining companies (they were then called companies) were converted into mounted batteries and took the field. About the same time the Fifth Regiment of Artillery was raised, first as a provisional regiment authorized by the President, but subsequently confirmed by legislation as a permanent part of the regular military establishment. All of its batteries were mounted.

The heavy artillery of the war period was, therefore, almost exclusively from the volunteers and came from the several States, generally, as regiments or battalions, and served as such either with the active armies of the field, or as garrisons and guards at fortified places and depots. Neither in its organization nor its service was there anything requiring comment except that, taken as a class, it was a remarkably fine body of men, and being well officered and but little subjected to the vicissitudes of campaign service, it was well instructed and disciplined. When the Army of the Potomac was so fearfully depleted by the battles from the Wilderness to Petersburg, a number of these regiments were called to the front from the works around Washington, and, as infantry, testified to their good fighting qualities. As garrisoning the works at Washington was considered a favored service, these regiments had no difficulty in obtaining recruits, and many of them took the field with upwards of 2000 bayonets each.

The other branch of the artillery service, the field artillery, comprised all batteries, of whatever denomination, operating with armies in campaigns. As before stated, nearly all of the sixty batteries of the regular service were mounted and equipped as light field batteries and were with the active armies in the field. But these did not constitute a tithe of the field artillery called into service; the other and greater portion came as volunteers from the States, some of which had fully organized regiments of twelve batteries each, in addition to which there was a very large number of independent batteries, *i. e.*, batteries belonging to

State quotas, but not belonging to any regimental organization. For the reasons quoted by General Hunt, if reasons they can be called, this was the method of accepting volunteer batteries most favored by the War Department. Some of the volunteer batteries were equipped as horse batteries, for service with cavalry. A proportionally large number of regular batteries were also thus equipped.

At the outbreak of secession, in the winter of 1860-61, rifled guns had not been introduced into our service; but about this time Parrott began manufacturing in large numbers rifled guns of his model, and the Army was speedily supplied with them. These were soon followed by the "Ordnance" 3-inch gun which eventually became the favorite. In the meanwhile great confusion as to kind and calibre existed. The arsenals of the North were ransacked and every piece, of whatever character, was placed in the hands of the troops then taking the field. This variety in guns caused great confusion and vexation in the supply of ammunition and material of all kinds. Many batteries were mixed as to their armament, having two and often three kinds of pieces. By the end of the first year of the war, however, nearly all of the batteries of the Army of the Potomac were supplied either with rifles of uniform model or with 12-pounder "Napoleon" guns. In the armies of the West this reform was not so rapid, and it was not until near the close of the war that anything like approximation to uniformity was effected.

In addition to the mounted and horse batteries there were a few batteries of siege rifles, 30-pounder Parrotts and 4.5-inch "Ordnance" guns, which accompanied some of the armies in the field; and there were also some batteries of 20-pounder Parrotts, a mongrel species, between siege and light field artillery.

Such, in brief, were the personnel and material of the artillery of the Union Army; an army that at one time had over a million men on its rolls and which was armed and equipped with an abundance, even a superabundance of field artillery. The system of organization of this vast artillery was one of development. Some of the regiments of infantry responding to the first call for volunteers brought with them to the field sections (platoons) of batteries. These, of course, proved of no service. But batteries were generally attached to brigades; this was but little better; finally they were attached only to divisions. It will be remembered that army corps were not formed in the Army of the Poto-

mac until March, 1862, and in the other armies not until several months subsequent to this. Even after the establishment of army corps, batteries continued to be assigned to divisions, and, in the Army of the Cumberland, to brigades, until after the battle of Chickamauga. It was not until the spring of 1864 that the batteries of each corps were united into a brigade and made a separate command with its own staff and supply departments.

The development of the system of organization and management of the artillery was essentially the same in each of the Union armies, and will be best understood by considering that of one of them separately; and as the Army of the Potomac was the first organized, the largest, the most compact and most symmetrical as to its various parts, it is selected by way of illustration.

At the commencement of its organization, soon after the battle of Bull Run, its artillery consisted of nine imperfectly equipped batteries, of 39 guns, 650 men, and about 400 horses. By the following March these numbers had swelled to 92 batteries, of 520 guns, 12,500 men and 11,000 horses, fully equipped and in readiness for active field service. Of this force 30 batteries were regulars and 62 volunteers.

Nearly all of the batteries of the regular service were with the Army of the Potomac, but in consequence of the difficulty of obtaining men for them—owing to bounties and preference for the volunteer service—many of them were consolidated, making one battery out of two.

This army was organized during the fall of 1862 into eleven divisions of infantry, to each of which were assigned four field batteries, one of which was a regular battery while the other three were volunteers. The purpose of this arrangement was that the regular battery should serve as an object lesson to the volunteers. The latter, both officers and men, coming fresh from civil life, had to learn everything of their new profession from the very alphabet up. They, however, proved themselves apt scholars and in an incredibly short time, favored by the protracted Indian summer of that year, most of this raw material was transformed into good serviceable batteries. The regular officers who were thus set before them as fuglemen, were, as a rule, of superior fitness for the work. Many of them had seen war service in Mexico and understood the requirements of campaigning; nearly all had, as subalterns, served tours of duty in light batteries—batteries then of unsurpassed excellence—and understood the internal

economy of this complicated branch of the service. The senior captain of the four batteries of each division was styled, more through courtesy than anything else, chief of artillery for the division, and had a vague sort of supervision over the whole. Field officers of artillery found no place in this arrangement—for organization it can scarcely be called.

At first glance it may appear that this arrangement of batteries was all that could be required for their efficient service in the field; but subsequent campaigns developed its weakness. The batteries, well equipped and fairly well instructed, were as though a multitude of well-equipped and instructed companies of infantry had been assembled, and, without higher organization, sent to the field. There was no gradation of rank and command; all commenced and ended with the battery commanders, and the batteries were attached, like excrescences, to incongruous commands of infantry.

In addition to the batteries thus assigned to divisions an artillery reserve was formed, consisting of eighteen batteries. This reserve was organized into three brigades, one of which consisted of four horse batteries for service with the cavalry. The cavalry was not consolidated into distinct commands until after the Peninsula campaign; when this took place these batteries were detached from the reserve and assigned exclusively to it.

The Artillery Reserve was a complete organization in itself, with its own distinct commander, staff and supply departments. It was in fact the only complete artillery organization and command in that army until the assembling of the batteries of each corps into brigades in the winter of 1863-64. The fact of its being thus organized conferred upon it the power of maintaining itself in the most complete state of efficiency, and it was therefore relied on with confidence. While the other and larger number of batteries was distributed to divisions, and necessarily restricted to a limited sphere of operations, and frequently, from the nature of the topography of the field, not able to act at all, the batteries of the reserve, being concentrated and well in hand, were always in readiness for service wherever most needed. They were, perforce, always in demand and did, especially the horse batteries, a large share of the effective artillery work of the first period of the war.

The name "artillery reserve" was a misnomer; it was in reality an artillery division, and instead of being in reserve, in the ordinary acceptance of that term, was generally the first in the



fight. Whenever a corps commander wanted batteries for any emergency, having no reserve of his own, he invariably sent for them to the reserve. The fact of batteries being assigned to divisions made division commanders chary of parting with them, and they gave them up, though but temporarily, only after many objections and often with delays fatal to the object in view. All who had comprehensive experience with artillery during the war will remember many instances of this kind within their own observation.

When the batteries of the corps were finally brigaded and thus rendered more efficient, less artillery was required to do the same amount of work, and the reserve gradually diminished in importance until finally it became little more than a place for the recuperation of broken-down batteries.

The whole subject of artillery in the Army of the Potomac was under the general supervision of a chief of artillery, who, with the rank of brigadier-general, was one of the staff of the general commanding. He was assisted in his duties by a sub-staff of his own, and, in addition to purely administrative duties, exercised a certain degree of command until shortly before the battle of Chancellorsville, when even this was taken from him; but during the disasters of that battle he was reinvested with command for the purpose of gathering the scattered batteries together and with them affording cover for the withdrawal of the discomfited army.

The commanding general had, in addition, a chief ordnance officer, who was at first for a brief period a colonel, but subsequently a captain or lieutenant, who supervised requisitions for artillery supplies and was a sort of red tape channel for their procurement.

The senior officer of artillery in a division—nearly always a captain of one of the batteries—was its chief of artillery, but his functions as such were chiefly nominal. When a corps was created the senior artillery officer in it was by law its chief of artillery "in addition to his other duties"; but as batteries continued to be distributed to divisions, his duties, always uncertain and undefined, were principally administrative; and this continued until the consolidation of batteries into corps brigades, each a distinct and definite command. This latter was a long stride towards greater efficiency and was apparently all that could be desired towards maintaining the batteries in good fighting condition and



using them efficiently on the field of battle. But the habit of having them assigned to divisions had now become so fixed and strong as to make it difficult to wean them away. It was a new departure and encountered opposition from many sources.

Division commanders had been so long accustomed to having them as part of their commands that they felt as though bereft of something really essential to them, and parted from them with as much reluctance as did old-time officers from their pig-tails and hair powder. So much was this the case that they still insisted on having batteries assigned to them for the march and for the battle, and upon one pretext or another generally managed to have them temporarily under their control, and this too at the very time they should have been free, under appropriate commanders, to render service where most needed.

The advantages of the new system were thus in a measure nullified, and a great deal of the viciousness of the old system left still to plague the service. The war closed before prejudice against it was entirely overcome, but sufficient was accomplished in the way of reform to demonstrate the wisdom of the change.

All of this will be more fully understood when we come to analyze certain battles and turn over, leaf by leaf, the records showing how the artillery was used and misused in each campaign, not only of the Army of the Potomac, but of the armies of the West also.

The old system, that of attaching batteries to small aggregations of infantry, belonging to the epoch of flint-locks and smooth-bores, had outlived its usefulness. The War of the Rebellion, following next after the Mexican War, naturally adopted the methods of the latter; but in the meanwhile, short as the interval was, a mighty change had taken place. The smooth-bore musket, of short range and inferior accuracy, had given place to the rifle, of long range, great accuracy and wonderful power, while the efficacy of artillery had advanced in equal ratio. Thus new conditions of battle were imposed upon both arms. That most affecting the use of artillery was that it should have a corresponding freedom of action and ability to take positions where full advantage could be had from its improved arm, and this, it is obvious, could not obtain so long as batteries continued to be tied down to the narrow limits occupied by comparatively small bodies of infantry—so long as they were apportioned out,

as it were, in equal quantities, at regular intervals along a line of battle, regardless of all topographical considerations of the field.

Reason points out that artillery should occupy those positions, afforded more or less by every battle-field, where it can reach the enemy to best advantage with its fire, and thus give support and assistance to the infantry irrespective of any particular division. In other words the artillery should be used for the benefit of the whole and not for any especial part. Position is the chief factor in the use of artillery, and its importance increases in compound ratio with the range, accuracy and power of the arm. Often the positions most favorable for infantry, or at least where the necessities of battle require its employment, are the very worst possible for artillery. Under such conditions, and they occur in every battle, it is manifestly worse than folly to emasculate the artillery by unnatural attachments.

The straitened resources of the Confederacy forced a recognition of this fact upon its commanders much sooner than it was forced upon the Union commanders. The first campaigns in Virginia pointed out to Lee the inadequacy of the obsolete system, and, before the year was out, he had all of his artillery organized into battalions of from four to six batteries each. To the command of each battalion was assigned a colonel or lieutenant-colonel, and to each two batteries a major. Thus his artillery was always in hand and available for service whenever and wherever most needed; consequently a smaller amount of it was able to perform an amount of work equal to that performed by the much larger artillery force of his adversary.

Bragg's experience, up to and including the battle of Stone River, caused him to withdraw his batteries from brigades and adopt the battalion system; but it was not until after the disasters of Chickamauga that the batteries of the Army of the Cumberland were thus withdrawn and a more efficient arrangement adopted for the artillery of that noble army.

Batteries attached to small infantry commands (such as were brigades and divisions during the Rebellion) being deprived by such attachment of any higher function than simply to follow their divisions or brigades and in battle take whatever positions might offer, have but little use for officers of higher grade than battery commanders; but when organized into battalions for more efficient service, officers become necessary who have rank commensurate with the importance of the command, and who are

thereby more upon an equality as to official influence with those of other arms co-operating with them.

This leads directly to the notice of another defect of our system during the war, most forcibly mentioned by General Hunt, who points out *ex cathedra*, that the War Department was from the beginning possessed with an idea that field officers of artillery were unnecessary for an army in the field. McClellan and other commanders, anxious to promote the efficiency of this arm by giving to it a proper system of command, were hampered in their efforts by this incubus. As far as possible the War Department, influenced by this idea, suffered no army organization that required field officers of artillery, the consequence of which was that but few, even of the limited number who were mustered in as volunteers, had legitimate commands. They were, in the slang of the time, "sent a-fishing," and were assigned to this or that duty, it is difficult now to tell what; but certain it is they were not performing duty in their appropriate spheres as artillery commanders.

Of those of the regular service, the retired list, then recently established, took a few who were totally incapacitated, physically, for the performance of duty (this however did not diminish the number, for others were promoted in their places); quite a number became general officers of volunteers and were assigned to infantry commands; others were placed on duty in the various States as mustering and disbursing officers in connection with the enrollment of volunteers,—positions demanding character and efficiency of the highest order. Not only were field officers of artillery thus employed, but those also of other branches of the service, who brought to the performance of the duties of these important positions not only experience, but that exactness in matters of detail and accountability which had become to them, through years of service, a second nature. Generally they were, it is true, the "old fogies" of the Army, but in these positions their "fogyism" was a desirable quality. It was experience combined with integrity, and fortunate was the Government in having such a class of men upon whom to rely.

It is fitting here to mention that during the first period of the war captains of the regular artillery were not permitted to accept colonelcies of volunteer regiments, it being claimed at the War Office that their services were much more valuable as battery commanders than as regimental commanders; that while there

was an abundance of good material elsewhere for colonels of volunteers, capable battery commanders were more rare. This prohibition, although advantageous to the formation of a good artillery, proved of great personal disadvantage to this class of officers. Their comrades in other branches of the service pushed ahead of them in rank, and gained a start that was not made up even after the embargo was raised.

It must, however, be said that as much as such officers were sought for to take volunteer regiments, captains of batteries were not so eager for the position as might be supposed. The brilliant services and reputation of batteries in the Mexican War, and the name and fame of such commanders as Duncan, Ringgold, Bragg and others, had imbued them with the idea—true for the Mexican War—that the command of a battery was far superior to that of a regiment. As subalterns of artillery they had looked to the command of a battery as the *ne plus ultra* of all their hopes, and when they at last reached this position, they were for a time contented, and this contentment caused them to neglect to take the long look ahead which would have regarded a colonelcy of volunteers as but a stepping-stone to higher rank and command. Even after the prohibition was removed many, through preference for their own arm, or despairing to regain what they had lost, left their batteries with reluctance. The policy of the War Department, in preferring independent batteries without a proportional number of field officers, shut off promotion to captains of volunteer artillery, and forced them to serve without the stimulus of hope of advancement.

As a rule the captains of volunteer batteries were a superior class of men who entered the service with enthusiastic pride in their adopted profession; but service without hope of soldierly reward had its depressing influence, affecting each individually and the service collectively.

In the Army of the Tennessee, batteries were attached to divisions as in the Army of the Potomac, but there was no reserve artillery, consequently nothing to rely upon in case of disaster, as was illustrated by the battle of Shiloh.

In the Army of the Cumberland the batteries were attached to brigades, one to each brigade, and this army, too, was without any reserve. The battles of Stone River and Chickamauga fully demonstrated the utter inefficiency of such an arrangement.

It is now proposed to follow the campaigns, or at least some

of the campaigns, of the chief Union armies, and note the manner in which this magnificent artillery was employed. In doing this, it is necessary to mention the operations of other troops co-operating with the artillery, but this will be done only so far as may be required to elucidate the part taken by the latter.

Commencing with the Army of the Potomac ; its first campaign was upon "The Peninsula of Virginia," that neck of land lying between the Chesapeake Bay and York River on the east, and the James River on the west, and extending from Fort Monroe to the city of Richmond, a distance of 84 miles.

The troops landed on the Peninsula for the prosecution of this campaign, of which Richmond, the capital of the Southern Confederacy, was the objective, consisted, originally, of three army corps, soon reorganized into five, each of two divisions of infantry. Each division consisted of three brigades, of four regiments each. Prior to the battles near Richmond, McCall's division of Pennsylvania Reserves was added, making a total of eleven divisions, averaging between nine and ten thousand men each.

The corps were commanded respectively by Sumner—the Second : Hentzelman—the Third : Keys—the Fourth : Fitz John Porter—the Fifth, and Franklin—the Sixth.

To each division were attached four batteries of six guns each, in addition to which the Artillery Reserve contained 106 pieces, making a total of 346 guns. For the command and management of this large force of artillery the only general and field officers were 1 brigadier-general ; 4 colonels ; 3 lieutenant-colonels, and 3 majors, a number obviously insufficient. In number of men alone, it was equal to an ordinary division of infantry, which would have at least four times as many of each of the foregoing grades.

By the 3d of April, 1862, all of this army, except two divisions, had arrived from Alexandria, and disembarked at Fort Monroe and vicinity, and on that day started on its memorable but fruitless campaign towards Richmond. Two days' marches brought it to a stand before the enemy's intrenchments at Yorktown. The Peninsula at this point is only about eight miles wide, and is almost cut in twain by Wormley's Creek, emptying into the York, and Skiff Creek, into the James. These two creeks almost interlock, and with their marshes, dams, and inundations form a formidable moat behind which the enemy was strongly intrenched.

The village of Yorktown, standing on a bluff overlooking the

York River, was surrounded by an earthwork of extraordinary strength, constructed with great engineering skill by the labor of slaves gathered there for that purpose. This work was armed with about 70 pieces of artillery, many of which were of the heaviest calibre. Strong redoubts, armed in like manner, had been constructed, at intervals across to the James, all connected by infantry parapets well protected in front by *abattis* and entanglements. Altogether it was a most formidable obstacle to the further progress of the Army of the Potomac.

In front of Yorktown itself, the country was quite clear of forest, with a gentle undulating surface, a good deal cut up, however, by brambly ravines. Further towards the James, the country is more level, and was more wooded.

Gloucester Point, across the river from Yorktown, was held and strongly intrenched by the enemy, and co-operated with the fortifications at the latter place in blockading the river against turning operations by water.

Before the army was fairly in position in front of Yorktown a storm of rain and snow occurred of several days' duration, and of such volume as to convert the whole region into a quagmire; to such an extent, in fact, as to preclude the movement of artillery or other wheeled vehicles. It was with difficulty that men and animals could get about. The whole bottom of the earth appeared to have fallen out, and prayers were offered up in the churches of the South for this seeming interposition of Divine Providence in behalf of its cause. Meanwhile, McClellan, having decided that the lines were too strong for assault, settled down to a regular siege of the place, and for this purpose brought up his siege train of 50 guns, to which were added pieces of heavier calibres—guns and mortars—until the whole amounted to 101 pieces, some of which were 100 and 200 pounder rifles, the heaviest then in service. The 1st Connecticut Heavy Artillery of 1400 men, under Colonel R. O. Tyler, and the 5th N. Y. Infantry, under Colonel Warren, were assigned to the management of this artillery, in the labor of which they were assisted by strong details from other regiments.

Siege operations were pushed forward with great diligence and energy. Parallels, bayeux, batteries, magazines, traverses, and all other operations known to military engineering were carried on in the most systematic manner. During this time—occupying a month—the light batteries had little to do, except to

furnish officers to superintend work on the trenches; men to construct gabions and fascines, and teams to haul the siege pieces to their places on the line of investment, which latter had to be done at night, and over very bad roads. Occasionally a battery was called to the front to suppress some fire of the enemy troubling the working parties. This was a service of emulation among the batteries, and afforded them good instruction in practical gunnery.

Everything was in readiness for opening fire on the morning of May 4th; but the enemy, well informed of this fact, quietly evacuated his lines during the night, leaving behind 56 of his heaviest pieces of artillery together with much material in the way of ammunition and stores.

As soon as possible, the cavalry under Stoneman and the four horse-batteries under Major Hays started in pursuit, overtaking the rear of the retreating column near Williamsburg, when a slight skirmish ensued, in which one piece of Gibson's horse-battery fell into the hands of the enemy by reason of being left unsupported by the cavalry. It was subsequently recovered, being so deeply imbedded in the mud as to make it impracticable for the enemy to remove it. Late in the afternoon Smith's division of infantry arrived; but as the country was wooded and entirely unknown to his troops, further operations were suspended until the following morning. The enemy encountered was merely the rear guard of Johnston's army, consisting of only about 3000 men; but Johnston, finding it necessary to hold the pursuing army in check until he could get his trains still further on their way to Richmond, called back other troops until almost his entire army took part in the battle.

The topography of the Confederate position at Williamsburg was very similar to that at Yorktown. Queen's Creek on the east, and College Creek on the west, almost interlock in the middle of the narrow peninsula, leaving space sufficient only for the main roads from Yorktown and Hampton. From these creeks to the town, distant about two miles, the country is a rich, almost open plain, slightly undulating near the creeks. Behind the creeks, the enemy had constructed a cordon of forts and redoubts, the principal one of which was Fort Magruder, near the centre, covering the main roads. It was a regularly constructed, enclosed fort, of great strength. On the opposite side of the creeks from this cordon of forts extended a belt of timber about



a mile wide, beyond which were open fields. The timber in front of Fort Magruder had been felled and formed into a powerful *abbatis*. Rifle pits abounded everywhere. All of this line of works had been carefully prepared as a position upon which to fall back if forced from Yorktown. But Johnston, now in command on the Peninsula, having decided to withdraw entirely to other lines prepared nearer Richmond, did not stop to occupy that at Williamsburg until forced to do so to cover his retreat; and the resistance that he then made developed into a considerable battle, the first, thus far, of the Army of the Potomac. The troops of the latter actually engaged, consisted, however, only of the divisions of Hooker and Kearny, and the brigades of Hancock and Peck.

A heavy rain during the night converted the peculiar soil of the country into mud without bottom. Hooker, by strenuous exertions, got his division up soon after daylight on the morning of the 5th, and immediately deploying it in the strip of woods before mentioned, led it forward through the fallen timber towards the enemy's rifle-trenches near Fort Magruder. At the same time, with more zeal than judgment, he ordered forward his batteries into the quagmire among the stumps and fallen trees. Webber's battery of the 1st U. S. Artillery, and Bramhall's 6th New York got in, and, notwithstanding the difficulty of the position, and the heavy musketry fire to which they were exposed, served their guns with excellent effect until the infantry was driven back. Their carriages being hopelessly sunk in the mud and tangled up among the stumps and logs, had to be abandoned. Webber's pieces were carried off, but the enemy being unable to extricate Bramhall's contented himself with chopping the carriages to pieces. The other two batteries of the division, coming into position later, profited by the experience of the two preceding and were posted where they did equally good service with comparatively little loss.

Hooker made his attack at 7.30 A. M., and pressed it most vigorously until about 4 P. M., when his division was relieved by that of Kearny, together with the brigade of Peck. Kearny's troops made spirited dashes through the fallen timber and gained some of the rifle trenches beyond, but night coming on put a stop to further operations. Owing to the density of the woods and the miry condition of the ground, none of Kearny's batteries were placed in position.



Hooker generously assumed all responsibility for the error in the misplacement of his batteries. It was his first experience in the management of artillery.

While the battle was in progress in the centre, it was ascertained that one of the redoubts of the enemy, on the flank towards York River, was unoccupied, and Hancock was ordered to take possession of it with his brigade. Making a detour to the right, he crossed the creek on the breast of a dam, and taking possession of the nearest redoubt, pushed on to another, also vacant. The one next in order to this he found occupied by infantry. The two batteries which accompanied him, Wheeler's and Cowan's, both of the 1st N. Y. Artillery, were placed in position; and by the precision and rapidity of their fire soon dislodged the enemy, many of whom were shot down by Hancock's skirmishers as they fled from the works. The enemy had some pieces of artillery near by, but these were soon driven away by the batteries just named.

Hancock now halted to await reinforcements promised him, and immediately thereafter received peremptory orders to withdraw to the first redoubt. This he postponed doing as long as possible, sending to his superiors information of the advantage of the position gained by him. While awaiting replies by his messengers the fighting was most severe in front of Fort Magruder, upon which position Hancock now had a flank and somewhat reverse fire with his batteries. These also fired into all reinforcements going to the assistance of the enemy. It was now 5 P. M. and no reinforcements coming, and no information from his superiors, Hancock began preparations to retire as ordered. At this moment the enemy, appreciating the advantages he had gained, brought up a heavy force to dislodge him. Hancock, showing as stout a front as possible, withdrew, retiring his batteries piece by piece, to a second line which he was forming on a slight elevation in rear. The last piece delivered charges of canister into the ranks of the enemy before retiring. The infantry regiments, keeping themselves well covered with skirmishers, retired with like system and order; the whole operation was, in fact, a model, on a small scale, of battle tactics. When the enemy's line had approached to within a few yards of the crest on which Hancock had established his line, the latter moved forward and, delivering three volleys, charged down the slope upon the enemy, who fled leaving many dead and wounded besides 160 prisoners. No reinforce-

ments arriving, Hancock was unable, as before, to reap the fruits of his victory by following it up. Shortly after this action was decided General Smith arrived with two other brigades and several batteries, as a reinforcement, but it was now dark and further operations were suspended for the night.

Sumner, then in command on the field, did not appreciate the very great advantage gained by Hancock's turning movement, and thus a rare opportunity of gaining prestige by giving the enemy a telling blow in this first battle was lost. Hancock's operations were the only redeeming features of the battle, and for this reason have been given somewhat in detail.

During the night the enemy withdrew, following his trains, now well on their way towards Richmond. Owing to the condition of the roads he had to abandon a number of guns and caissons. For the same reason, little could have been accomplished by pursuit, if attempted, and McClellan therefore rested his troops at Williamsburg until the 8th, when he again resumed the march. Meanwhile the divisions of Franklin, Sedgwick, Porter and Richardson were sent by water from Yorktown to West Point, on the Pamunkey, which brought them within about twenty-five miles of Richmond. Here, on the 16th, they reunited with that portion of the army that had marched by land. McClellan established his base of supplies at the "White House" on the Pamunkey, and by the 21st had closed up his entire army and taken position on the Chickahominy, distant seven to ten miles from Richmond.

Two of the horse batteries, Robertson's and Tidball's, accompanied the cavalry, which, with some infantry, had been formed into a light command under Stoneman, for the purpose of closely following the enemy and of ascertaining the topography of this little known region, so that the bulk of the army could follow understandingly. In this duty these horse-batteries demonstrated the ability of this kind of artillery to co-operate with cavalry under all vicissitudes of service.

This was the first campaigning epoch of the Army of the Potomac and, for this reason, has been given with more minuteness than it is practicable to bestow upon other events, although of much greater magnitude.

All the approaches to Richmond were fortified and the city itself surrounded by a strong line—in fact several lines—of intrenchments. About eight miles to the eastward of the city,

sweeping around to the southward, flows the Chickahominy, a tributary of the James River, which in this part of its course is but an insignificant stream, only about forty feet wide; fringed by a dense growth of forest trees, and bounded by low marshy bottom lands, varying from half a mile to a mile in width. It is subject to frequent, sudden and great variations in the volume of water, and a rise of a few feet overflows the bottom lands on both sides. Such a rise occurred soon after the arrival of the Army of the Potomac, when a part of it had crossed to the farther side, placing it in a most critical position.

Before commencing operations on the Richmond side of the Chickahominy, McClellan cleared his right flank of a threatening force of the enemy, of about 9000 men under Branch, stationed in the vicinity of Hanover Court House, some fifteen miles due north from Richmond. This duty was intrusted to Fitz John Porter, who had for the purpose a mixed command of infantry, cavalry and four batteries of artillery, one of which was Benson's horse battery. The enemy made stout resistance, but was finally forced back upon Richmond, with considerable loss. This was a handsomely managed engagement, and the artillery took a conspicuous part in it.

While this was transpiring on the extreme right, Heintzelman's Third, and Keyes' Fourth Corps, crossed the Chickahominy and took up a line eight miles south of Richmond, extending from the Chickahominy on the right to the eastern edge of White Oak Swamp on the left, a distance of some seven miles, with Seven Pines on the Williamsburg road as the centre. The corps of Sumner, Porter, and Franklin remained on the other side of the stream opposite the right of Heintzelman's line. Heintzelman being the senior officer on that side commanded the whole. Casey's Division of Keyes' Corps was at first stationed at Seven Pines, but was ordered to take position about three-fourths of a mile in front on the Williamsburg road, where it constructed a small redoubt for a battery for six field pieces. This redoubt was flanked to the right and left by incomplete rifle-trenches.

Naglee's Brigade of this division extended to the right and front through Fair Oaks, a station on the West Point railroad, Wessel's Brigade occupied the trenches on the left of the redoubt, while Palmer's was in support in rear. Bates' battery—A, 1st N. Y.—occupied the redoubt with its six Napoleons, and near by was Spott's battery, H—of the same regiment. Regan's 7th and

Fitch's 8th N. Y. Independent batteries were near the trenches to the right and left respectively.

Casey's position was virtually that of an outpost, assailable not only in front, but on both flanks; furthermore, it stood directly across the main road to Richmond and within a mile or so of the enemy's intrenched position.

The second or main line, running through Seven Pines, three-fourths of a mile in rear of Casey, was held by Couch's Division, also of Keyes' Corps, with Hooker's Division of Heintzelman's Corps, far to the left, near the edge of White Oak Swamp. Kearny's Division, also of Heintzelman's Corps, was in support (or supposed to be), at Savage Station, some two miles back of Couch's position. The troops of these two corps, thus scattered, consisted of only about 25,000 men present for duty.

Couch had with his division, batteries "C," (McCarthy's) "D," (Flood's) "E," (Miller's) and "F," (Brady's) First Pennsylvania, commanded by Major West of the same regiment.

Hooker had batteries "H" and "D," also of the First Pennsylvania, together with the 4th and 6th N. Y. Independent batteries, all under command of Major Wainwright of the First N. Y. Artillery.

Kearny had batteries B, New Jersey Artillery, E, 1st R. I. Artillery and G, 2d U. S. Artillery, all under Captain Thompson of the last named battery. None of Kearny's batteries were, however, engaged; the miry nature of the ground, by reason of the constant rains, precluding the possibility of getting them to the front, except by the use of ten or more horses to each piece. Constant skirmishing had been kept up between the pickets of Keyes and Heintzelman and those of the enemy, large bodies of whom were seen in front of Casey's position. The wooded nature of the country screened the movements of the opposing forces from each other's close observation.

Meanwhile, McClellan, to establish communication between the wings of his army, was vigorously pushing forward the construction of several bridges across the Chickahominy. But during the day and night of the 30th of May, a violent storm occurred; the rain falling in torrents, rendered work on the rifle-trenches and bridges impracticable, made the roads almost impassable and threatened the destruction of the bridges over the Chickahominy.

The enemy perceiving the unfavorable position of the Army of the Potomac, and the possibility of destroying that part of it

cut off by the rising stream, threw an overwhelming force upon the isolated corps of Heintzelman and Keyes. His troops consisted of the grand divisions of Longstreet, D. H. Hill, G. W. Smith and Huger, numbering in all about 55,000 men present for duty, and commanded by Gen. J. E. Johnston in person.

Leaving the left wing of his army to guard against any counter attack that McClellan might attempt by crossing the Chickahominy further up, Johnston organized the troops just mentioned into three columns of attack. The centre, or main column under Longstreet, consisted of two divisions of thirteen brigades. This column took the line of the Williamsburg road directly for Casey's position. The left column under G. W. Smith consisted of eight brigades, and taking the "Nine Mile Road" was intended to close in around the right flank of the Union position. The column of the right, consisting of five brigades under Huger, taking the Charles City road, was to sweep around upon the Union left. The central column was accompanied by six batteries. The other columns also had several batteries. Johnston had thus twenty-six brigades against twelve of his adversary. Sumner's arrival late in the afternoon of the 31st added six more. With this great disparity of numbers in his favor, the enemy was justly confident of success.

That portion of the Richmond and West Point railroad in front of Fair Oaks station was intact, and the enemy used it to its fullest capacity during the night of the 30th in bringing troops to that part of his lines, which being but a mile or so in front of Casey's position made it not difficult for him to mass near it under cover of the woods.

Early in the morning of the 31st, Casey's troops were set to work, as usual, on the rifle-trenches, but about 10 A. M., the pickets in front reporting the advance of the enemy, preparations were at once made for his reception. The batteries, with the exception of the one in the redoubt, were hitched up. The real attack, however, was not made until about 2 P. M., when the enemy began shelling the position from guns stationed beyond the woods, from which his line of infantry soon emerged. Spratt's battery was sent, as rapidly as the condition of the ground would permit, to the right, to the support of Naglee, near Fair Oaks. Here the musketry firing soon became intense, and Spratt and one of his lieutenants were wounded; but his battery continued to be skillfully and bravely handled by Lieutenant Mink, and

held its position until the infantry was forced back, when it, too, retired to another position and continued the fight. In retiring most of the horses of one of the pieces were disabled, and the piece fell into the hands of the enemy. Regan's battery, stationed on the right of the redoubt and near the "Nine Mile Road," being behind some infantry that had been thrown forward to the woods, was unable to fire, but moving to the left opened with marked effect upon the masses of the enemy then near the redoubt. The latter, working around Regan's flank, caused him again to change his position, which, in consequence of the mud, was done with great difficulty. It was while superintending the operations of this battery that Major Van Volkenburg of the 1st N. Y. Artillery was killed. Fitch's battery on the left of the redoubt fired with rapidity and effect, until compelled to retire with the infantry. Bates' battery, in the redoubt, was splendidly served and held the position against the most determined attacks of the enemy. Owing to the miry condition of the ground the enemy was not able to bring his artillery to bear directly on it.

Some of Casey's regiments had not behaved well, and, leaving the field in disorder, caused an impression that his whole division acted in the same manner. Such was not the case; the majority of it fought well, and some of it heroically. The force of the enemy opposed to Casey—more than five times his number—struck him not only in front but upon both flanks, so as almost to envelop his position. His troops then fell back, but were soon rallied, some of them, however, not until it was too late to take further part in the battle of that day. The losses of this division in killed and wounded, not exceeded by any other division, is evidence of the fighting it did. A few regiments from Couch's division were sent forward to its assistance, but from some unaccountable reason neither Kearny nor Hooker arrived in time to render it any aid. When it became evident that the redoubt could no longer be held, Colonel Bailey, First N. Y. Artillery, commanding Casey's batteries, entered it to superintend spiking the guns, and was there killed by a musket shot through his head. About the same moment his adjutant—Ramsay—was also killed.

Bailey was a lieutenant of the Second U. S. Artillery, and was an officer of great merit and promise.

When the redoubt was abandoned, all that remained of Casey's division fell back, some to Couch's line, but most of it to the vicinity of Savage Station.



The whole force of the attack now fell upon the second line, held by Couch and such of Casey's regiments as had been rallied, together with portions of Kearny's division just up from the rear. When it looked as though the enemy would succeed in carrying the redoubt, Keyes posted the batteries of Flood and McCarthey of Couch's division on the right and left of the Williamsburg road and lined the rifle-trenches near them with infantry. Miller's battery was posted farther to the right to resist the enemy coming against that flank. This battery, though forced to change position several times, did splendid service, as did also the other two batteries. So active were they in resisting several brigades of Smith's wing coming to the assistance of Longstreet, that vigorous efforts were made to capture them, but without success. The official reports of the enemy testify to the efficacy of the Union artillery in this battle.

It so happened that nearly all the field officers of artillery of the Army of the Potomac were with the corps of Keyes and Heintzelman, which accounts in a great measure for the efficient handling of the batteries.

Smith was to have made his attack simultaneously with that of Longstreet, but owing to some peculiar atmospheric cause the firing of the latter was not heard at Smith's position, and it was not until between four and five o'clock that Johnston, who was present with Smith, was informed by messenger of Longstreet's attack. Smith's brigades were at once advanced. Couch observing them approaching his right, hastened with part of Abercrombie's brigade and Brady's battery to head them off, but being overpowered and cut off from the rest of his command he fell back towards the "Grapevine Bridge," a wabby structure over the Chickahominy hastily constructed by Sumner's corps to reach the field of battle. Here he was joined soon after by Sumner with Sedgwick's division, accompanied by Kirby's battery of the 1st U. S. Artillery. The other batteries of the division were unable to follow on account of the miry condition of the ground. It was only by almost superhuman efforts that Kirby was able to get his battery through. His horses were useless in the mud and the guns had to be drawn by hand, a hundred or more men to a piece.

Sumner, anticipating the urgent necessity of sending his troops to the assistance of those across the stream, had made the most strenuous exertions to construct a practicable bridge. No

sooner had Sedgwick joined Couch than the enemy came in strong force, and opened a heavy fire along the whole line. "He made several charges, but was each time repulsed with great loss by the steady fire of the infantry and the splendid practice of the battery. After sustaining the enemy's fire for a considerable time, Sumner ordered five regiments to advance and charge with the bayonet. This charge was executed in the most brilliant manner." The enemy was driven in confusion from this part of the field, and darkness now ended the battle for the day. In this attack, which lasted not over an hour, Smith reports that he lost 164 killed, 1010 wounded and 109 missing.

Just as this conflict was closing, Tompkins, commanding another of Sedgwick's batteries, struggled into position by the side of Kirby, and about the same time Bartlett succeeded in getting up one of his pieces. The ground was in such condition that the wheels of the carriages sank to their hubs, and horses mired to their girths. No number of horses that could be attached could move a piece without the assistance of men at ropes.

About sunset Richardson arrived with Sumner's other division, and took position on the left of Sedgwick, extending his left towards Kearny's Division near Seven Pines. Richardson had crossed also on the "Grapevine Bridge," but his batteries, together with the remainder of Sedgwick's, were unable to follow. The rising water had swept away the corduroy roadway at either end of the bridge, and this could be replaced only by the greatest labor. Each piece and caisson had to be dragged over by hand. The entire night, dark and rainy, was consumed in this work; but the batteries were all in position before the enemy attacked in the morning. Seldom—perhaps never—during the war were batteries moved under such difficulties, and with such untiring zeal and energy on the part of their officers and men.

During the night and early morning such dispositions were made along the entire line as were necessary to close up gaps and make connections. The divisions stood from right to left: Sedgwick, Richardson, Kearny, Couch, and Hooker, with the fragments of Casey's brigades between the two last. The batteries were disposed along the line with their divisions, but the miry condition of the ground precluded all manœuvring. Sumner as senior officer commanded the whole.

Soon after 6 o'clock on the morning of June 1st, the enemy



approached and opened a rolling fire of musketry at short range along the right of Sumner's line, and at the same time moved heavy columns down the roads in front of Richardson's position. The batteries of the latter met these columns with a crushing fire; the infantry at the same time opened with a fire so hot and well sustained as to cause the enemy to fall back. Bringing up fresh troops he renewed the attack, and again was repulsed, and this time followed up by bayonet charges of French's and Howard's brigades, which checked all further attempts at attack on that part of the field.

Kearny's, Couch's, and other troops in front of Longstreet, did not wait for him to attack, but opened the action themselves. D. H. Hill, whose division was the head and front of the attacks upon Casey's position the day before, says of this: "Armistead's Brigade fled early in the action, with the exception of a few heroic companies with which that gallant officer maintained his ground against an entire brigade. Mahone withdrew his brigade without orders, I sent up Colston's to replace him, but he did not engage the Yankees as I had expected him to do."

Hill then mentions a number of brigades that fought well, but for some reason a great deal of the spirit of fight had been taken out of Hill's troops in the battle of the previous day. After being driven back, Longstreet's column kept up a show of resistance until dark, when all silently withdrew. Hill, speaking of the withdrawal says: "The delicate operation of withdrawing 30,000 men in the presence of the enemy had to be performed before daylight. The artillery and wagons had to pass through slushes and mud-holes over the axle, and the whole road was almost impassable for infantry." The enemy left upon the field his dead and wounded, and many signs of his discomfiture and hasty retreat. But he had not far to go before being secure behind his impregnable intrenchments. It was simply out of the question for the Union troops to follow him up with any prospect of reaping the slightest advantage.

Thus ended the battle of Seven Pines, or of Fair Oaks as it is generally called; a battle probably less understood than any other of the war.

The unprecedented rise of the Chickahominy, preventing almost the possibility of reinforcing that part of the army on the further side, practically assured success to the enemy. It enabled him to attack with a vastly superior force, over ground

entirely familiar to him, and with all the advantages of the initiative.

The Union artillery, although so hampered by the condition of the ground, took no insignificant part in this victory. The redoubt that figured so conspicuously in the battle of the first day, was constructed by Colonel Bailey for the artillery that so gallantly defended it; and it prevented the enemy from breaking the lines at his first onset, and delayed him until Kearny and Sedgwick could arrive upon the field. The firmness of the other batteries was reassuring to the infantry, who held more firmly to their rifle-trenches through the influence of good example.

We have seen with what pertinacious bravery the redoubt was held against the assaults of the enemy's main column. The artillery fire from this redoubt disorganized the enemy's efforts until reinforcements arrived. The delay of Smith's column to attack at the appointed time, and the non-arrival of Huger's column on the right flank, all tended to make the success of Longstreet's column incomplete.

On the second day, owing to the arrival of Sumner, there was less disparity of numbers, but still, according to all rules of battle, the Confederates should have succeeded. Johnston was carried from the field, wounded. Late in the afternoon of the first day, Smith, as senior officer present, succeeded him in command, and he attributes the mishaps of the second day to the meddlesome interference of Jeff. Davis, who was present on the field. About 2 P. M. of that day the latter invested General R. E. Lee with command of this army, a command which he held until he surrendered it at Appomatox three years afterwards.

Seeing the hopelessness of driving this wing of McClellan's army into the swamps of the Chickahominy, as had been expected, Lee ordered his army to withdraw to their intrenchments.

The losses in this battle were heavy. Those of the Army of the Potomac were 790 killed, 3594 wounded, and 647 missing, making a total of 5031.

That of the Confederates was 7997, nearly all of whom were either killed or wounded.

The enemy carried off the six guns captured with the redoubt, together with the one taken from Spratt's battery; certainly a very moderate price for the Union cause to pay for a victory which prevented the greatest of disasters to that army.

The good fighting of those two days undoubtedly saved the

Army of the Potomac from a most serious disaster; and disaster at that time meant something more than the mere loss of a battle.

The losses sustained at Fair Oaks, by each side, were almost the same as at the great battle of Missionary Ridge, including Lookout Mountain and Orchard Knob; a battle that figures in history as one of the greatest of the war.

The rains that had so interfered with military operations at the time of the battle of Fair Oaks, continued until about the middle of the month, keeping the whole country in a condition of quagmire, entirely impracticable for artillery, and almost so for infantry. This hot and damp June weather had developed the fatal Chickahominy fever, which, together with other diseases incident to campaigning, was reducing McClellan's army at a fearful rate. Reinforcements that had been promised him were withheld in consequence of "Stonewall" Jackson's operations in the Valley of Virginia, which had a threatening look towards Washington.

As soon as the Chickahominy subsided and the ground had become firm enough for moving trains and artillery, Franklin's Corps was crossed to the other side, leaving only that of Fitz John Porter to hold the right flank and guard the line of communication with the base on the Pamunkey. Porter was reinforced by McCall's Division from McDowell's Corps; which corps had been held back on the line of the Rappahannock as a guard to Washington, but which, later, had been hastened to the Shenandoah valley to assist Fremont and Banks in repulsing Jackson, who was then driving everything before him in that quarter.

The line occupied by the troops on the Richmond side of the Chickahominy was about the same as that established by Keyes and Heintzelman previous to the battle of Fair Oaks. By incessant labor it had grown into one of formidable breastworks, with redoubts and emplacements for batteries at frequent intervals. Porter intrenched himself, in like manner, behind Beaver Dam Creek, a small tributary of the Chickahominy. His batteries occupied positions commanding the roads and open ground across the creek.

Jackson having, meanwhile, cleared the Shenandoah valley, was now approaching with mysterious rapidity to assist Lee in crushing the right flank of McClellan's army, and destroying his connection with the White House base. Preparatory to this, Lee

had constructed a powerful line of intrenchments confronting McClellan on the Richmond side of the Chickahominy. These he now proposed to hold, with a comparatively thin line, while he withdrew the bulk of his forces to the other side to crush Porter.

At this time Lee's army, including that of Jackson, then upon the point of junction with him, consisted of seven divisions of thirty-five brigades, containing 168 regiments.

McClellan's army consisted of eleven divisions of thirty-three brigades, containing 132 regiments. As regiments in each army were about of equal strength, the foregoing numbers represent very closely the relative strength of the two armies. This is exclusive of cavalry, in which Lee had slightly the preponderance.

Lee had about 190 field guns, McClellan had 346, a very great preponderance in this arm; but the former had quite a number of sea-coast guns in position on his works, and, besides, had already adopted the battalion system for most of his artillery, and therefore had greatly the advantage in its management and use.

It may here be remarked that ten guns of the siege train at Yorktown—five 4.5 in. ordnance and five 30 pdr. Parrotts—followed up as soon as the roads became firm enough, and joining the army were placed in position on the left side of the Chickahominy opposite some heavy guns of the enemy on the other side. During the night before the battle of Gaines' Mill they were moved across to the other side and placed in battery to strike the enemy's columns as they advanced against Porter. From each position these guns fired a few shots, probably not over a hundred in all. These guns were in charge of two batteries of the 1st Connecticut Artillery.

Batteries B and M of this regiment, each serving four  $4\frac{1}{2}$  inch siege rifled guns, continued with the Army of the Potomac through all of its campaigns from Fredericksburg, December, 1862, to April, 1864. Notwithstanding the weight and clumsiness of these siege guns they managed to get through, and were always on hand but were seldom used. In consequence of the limited amount of ammunition that could be carried for them, they were always reserved for the supreme crisis, and that seemingly never arrived.

On the morning of June 26th, Lee, leaving the divisions of Huger and Magruder in the intrenchments confronting McClellan and withdrawing those of D. H. Hill, Longstreet and A. P. Hill,

crossed the Chickahominy to make his junction with Jackson and together attack Porter. The divisions left behind consisted of nine brigades of forty-four regiments, and fifteen field batteries of about sixty pieces. The three divisions which crossed to the left side consisted of seventeen brigades of eighty-one regiments and twenty-one batteries of about eighty-four guns. These united to Jackson's force gave Lee twenty-six brigades of 124 regiments and about 120 guns, against Porter's force of nine brigades of thirty-seven regiments and ninety-six guns. Towards the close of the battle of the 27th—Gaines' Mill—Slocum's Division of twelve regiments joined Porter, making his entire force engaged in that battle amount to forty-nine regiments as against Lee's 124. Very late in the afternoon the brigades of French and Meagher were crossed over also, but reached the field after the close of the battle. These brigades are not therefore counted in with Porter's fighting strength.

Huger and Magruder were to hold their positions against any assaults, and to observe closely the movements of the troops opposed to them. Lee thought McClellan would probably withdraw to save his base at the White House. In this case Huger and Magruder were to follow closely. Stewart's cavalry, of ten regiments with a horse battery, was thrown out on Jackson's left to guard his flank and observe all movements of the Union Army.

Lee having crossed his three grand divisions, commenced, about 3 P. M., an attack along Porter's whole line, making a determined effort to force the passage of the road on the right. This was successfully resisted by the brigade of Reynolds' and the artillery posted to sweep this approach. After a severe struggle he was forced to retire, with heavy loss. A rapid artillery fire, with desultory skirmishing, was maintained along the whole front, while the enemy massed his troops for another effort about two hours later at the lower road. This attack was likewise repulsed, the artillery taking a conspicuous part in it also. The firing ceased and the enemy retired about 9 A. M. This was the battle of Mechanicsville, the first of the "Seven Days' Battles."

The position on Beaver Dam creek, although so successfully defended, had its right flank so far in the air as to be easily enveloped by Jackson's force. It was, therefore, determined that Porter should fall back and occupy the high ground near Gaines' Mill and there make a stand to gain time for the trains and

other impedimenta to get on their way to a new base on James River ; a change that McClellan had now decided upon, deeming it impracticable to maintain the base on the Pamunkey.

After daylight on the morning of the 27th, Porter withdrew, and, unmolested, took up his new position. The enemy followed closely, but were delayed by the skillful manœuvring and excellent fire of two horse batteries, which, unsupported by any other troops, covered the rear. These batteries had been sent to Porter for this express duty.

Porter disposed his corps with his right and centre on the hills and his left extending down to the low grounds. Part of the front was covered by the ravine of the Gaines' Mill stream, filled with underbrush. The ground occupied, as also that in its front, consisted of open fields, interspersed with strips of woodland. On the right, and on the low ground towards the Chickahominy, the country was entirely wooded.

Although Porter's troops occupied the ground several hours, awaiting the appearance of the enemy, no attempt whatever was made to strengthen the position by temporary works. A few trees were felled on the extreme left as a barrier, and that was all. This, further on in the war, would have been deemed culpable neglect. Two years after this date, when Grant fought over this same ground with the combined armies of the Potomac and James, and with a difference in numbers as great in his favor as it was now against Porter, the whole surface of the land was converted into intrenchments. Every command, large or small, intrenched itself as if by instinct.

Porter arranged his troops with the division of Sykes on the right, and that of Morell on the left ; each of three brigades. Each brigade had two of its regiments in reserve. Part of the artillery of these divisions was posted with the infantry at intervals along the front line ; the rest was held in reserve. McCall's division formed a second line in rear of a strip of woods between it and the front line. Six additional batteries, two of which were horse batteries, had been sent over from the artillery reserve, and were temporarily attached to the divisions. For all the sixteen batteries that Porter had, there was no artillery commander, none but the battery commanders themselves, who fortunately proved themselves equal to the occasion. There was little or no judgment exercised by division commanders in posting their batteries. Sykes evidently thought he had fulfilled every condition when he



divided Edwards' battery and sent two guns from it to each of his three brigades. Morell divided some of his batteries in the same manner, besides posting a couple of them, with little or no support, on the extreme left, where from the topography of the field they had little scope for their own defense, and fell an easy prey to the enemy. As the battle progressed the batteries in reserve were thrown forward and took the best position available. The extreme simplicity of the battle favored this, and enabled battery commanders to supplement by their own good judgment what was lacking in proper organization and command of the artillery.

Two regular batteries, almost entirely unsupported, were posted on the extreme right flank, and by their united and well-sustained fire were enabled to repel three powerful assaults, and prevent Jackson from enveloping and crushing in that flank. Jackson, in his report says that he brought up parts of four battalions of batteries, in all about 30 pieces, to break this flank. The two batteries referred to withstood a good portion of the firing of these pieces.

General Cooke, with a handful of cavalry, took position under the hill near the extreme left, to observe that flank, and if opportunity offered, was to strike the enemy on the plain.

The march of Jackson's column having been somewhat delayed, he did not effect a junction with Lee until the forenoon of this day. For this reason Lee delayed his attack until about noon, when he began feeling with skirmishers for the weakest points of his adversary's line. Soon thereafter large bodies of infantry, supported by a warm fire of artillery, engaged Porter's whole line. This first attack, made with great impetuosity, continued for about an hour, but was finally repulsed. Lee says his regiments "were rallied and in time repelled the advance of the enemy. Some brigades were broken, others stubbornly maintained their positions, but it became apparent that the enemy were gradually gaining ground."

Lee readjusted his lines and massed his troops for another assault. Porter drew his infantry and artillery towards the centre, and prepared to receive the shock. In about an hour the enemy advanced, and renewed the attack more furiously than before. Lee says of this attack: "On the right the troops moved forward with steadiness, unchecked by the terrible fire from the triple lines of infantry on the hill, and the cannon on both sides.

of the river, which burst upon them as they emerged upon the plain. The dead and the wounded marked the way of this intrepid advance."

After about an hour of the most sanguinary struggle this assault also, was repulsed, followed by an hour of ominous silence, indicating that Lee was again massing for a still greater effort.

Porter, appreciating from the first the greatly superior numbers of his adversary, had sent repeated requests to McClellan for reinforcements from the corps disengaged on the opposite side of the Chickahominy; but so skillfully were Huger and Magruder keeping up their show of attack in that quarter, that McClellan could be induced to part with but one division, that of Slocum, of Franklin's Corps, which joined Porter in time to render invaluable assistance in repelling the third assault. This the enemy made about 6 P.M., advancing immense bodies of infantry under cover of a terrific fire of artillery. This furious attack was, likewise, successfully resisted and repulsed; but immediately renewed by fresh troops.

Porter pushed up his reserves as rapidly as possible to strengthen the front line, and again the enemy was repulsed. As each fresh regiment went in, the effect was shown by the enemy giving way on that part of the line. This continued until the last reserve regiment had been advanced. But those of the enemy appeared to be inexhaustible and, little by little, he gained ground. As if for a final effort, just as the sun was setting, the enemy massed all that he had on the right and left, and then threw them with overpowering force against Porter's thinned ranks. Porter says: "In anticipation of this our artillery, which until now had been well engaged at favorable points of the field in dealing destruction upon the enemy, or held in reserve, was now thrown to the front to cover the withdrawal of our own retiring troops. The batteries already engaged continued playing on the coming masses, while the others (in all about eighty guns) successively opened as our troops withdrew from in front of their fire, and checked in some places, in others drove back the advancing enemy."

The shortness of the line occupied by these eighty or more guns so concentrated them as to make of them virtually one battery, and gave to their fire the effect of artillery in mass. The enemy in their reports give full credit for the execution produced by this fire.



On the extreme left the enemy had gained a strip of woods, and was forcing back the infantry at that point. Cooke, fearful for the safety of the three batteries at that point, ordered a charge by the five small troops of the 5th U. S. Cavalry,—during which the fire of the batteries became masked. While no impression, whatever, was made on the enemy by the charge, a volley of musketry broke it and sent the cavalymen and many riderless horses in utter rout to the rear through the batteries. Before the latter could recover from the confusion into which they were thus thrown the enemy were upon them. This break caused the entire line to fall back, not, however, in confusion, but by contesting bravely every inch of the ground, and showing such a stout front as to deter the enemy from following.

The object of the battle had been gained, McClellan was enabled by it to complete his arrangements for changing his base to the James River, an operation of the utmost delicacy as a military movement.

During the night following, Porter withdrew, unmolested, across the Chickahominy. McClellan, in not attacking the thin line in front of him on the south side, while the bulk of Lee's army was fighting Porter on the north side, committed the fatal mistake of his military career.

In this severe contest, one of the most remarkable of the war, from the disparity of numbers, the determination and persistency of the assaults and the pluck with which they were resisted, each battery played its own special part, and did it nobly. In the aggregate their services were as valuable as brilliant. It is not probable—it is highly improbable—that the infantry, as bravely as it held its ground, could have withstood even the first assault without the support and confidence imparted to it by the artillery. This support and confidence was mutual, and never did two arms of the service co-operate to greater advantage. There were, it is true, nineteen guns lost, but they were not lost when standing idle, or when entangled in the woods endeavoring to escape, but while bravely doing their duty on the front line of battle. "It was not until the last successful charge of the enemy that the canoneers were driven from their pieces or struck down that the guns were captured."

The losses in killed and wounded were in proportion to the intensity and length of the engagement.

McClellan determined upon Harrison's Landing, a few miles

below the confluence of the Appomatox, as his new base. In a straight line this was about twenty-five miles almost due south of the right of his position on the Chickahominy. He had about forty miles of trains, exclusive of the artillery carriages, and but one road over which to move, and this was intersected by several others leading from Richmond in such manner as to bring the enemy upon his right flank at dangerous points.

Lee, discerning the object of this movement, lost no time in following it up, and making use of the roads just mentioned, endeavored to cut in so as to engage the Union column in detail. He so far succeeded in this as to bring on several heavy engagements with portions of McClellan's army, in each of which he was, however, unsuccessful in breaking the column. The first of these was on June 28th, the day succeeding the battle of Gaines' Mill, when he attacked Franklin's Corps as it was withdrawing from its intrenchments at Golding's farm. On the same day Sumner's Corps had a sharp engagement at Allen's farm, near Savage Station. In both of these affairs the artillery was conspicuous for its efficiency.

On the following day, that is, June 29th, occurred the battle of Savage Station, in which both Sumner's and Franklin's Corps were engaged, and in which their batteries did most excellent work. This engagement, although short, was sharp and decisive, resulting in a signal repulse of the enemy.

At the crossing of White Oak swamp, the enemy made another attempt to cut the column, but were handsomely repulsed, after a severe fight, by portions of Sumner's, Franklin's and Keyes' corps. Here the artillery was directed with great effect by Captain Ayres, afterwards General Ayres. Hazzard's Battery of the 4th U. S. Artillery, was heavily engaged and exposed to a very hot musketry fire in which Captain Hazzard was killed.

A few miles beyond White Oak swamp several roads from the direction of Richmond converge at a place known as Glendale or Nelson's farm. Here, on the morning of the 30th, McCall deployed his division, posting two of his own batteries and three from the Artillery Reserve in front of his infantry line, in an open field surrounded by woods. He had no artillery officer, other than the battery commanders, to regulate and control these batteries, and see that they were properly posted.

Some of the infantry, proving unsteady, communicated their panic to the batteries of Diederichs and Knieriem, which stam-

peded to the rear, leaving a number of their pieces with the enemy. A most determined charge, or repeated charges, were made upon Randol's Battery of the 1st U. S. Artillery, which, under that plucky officer stood its ground, and for a time repelled with canister the furious onsets of the enemy. The latter, however, rushed on in perfect recklessness, and captured the battery; mortally wounding one of Randol's lieutenants, and killing and wounding the men while in the act of serving their pieces for the last discharge. A portion of the corps of Sumner, Heintzelman and Franklin now came up, as likewise did many reinforcements for the enemy, and a severe battle ensued, which resulted in the enemy being again repulsed. In this conglomeration of commands there was no one in particular to supervise and give direction to the whole. The batteries of the various divisions, increased in number by several from the Artillery Reserve, took up the positions assigned them by division commanders, or such as they could find for themselves, some of which proved good, and the batteries occupying them did excellent service. Other batteries wasted ammunition by *shelling woods*, and firing at unseen enemies. With inexperienced commanders "shelling woods" is always a favorite method of employing batteries, and here the batteries being without appropriate officers of their own branch, were at the mercy of any who chose to give them orders.

Having repulsed the enemy at this point, the troops resumed the march during the night, and on the following morning took position on Malvern Hill, where was fought the hotly contested battle of July 1.

As there was now no force threatening Richmond at any point, Lee was enabled to withdraw every man from the defenses for the pursuit of McClellan; and, in addition, he was joined by Holmes' command of 20 regiments and 10 batteries from the Department of North Carolina, bringing his army up to 188 regiments against the 132 of McClellan's army. Their field artillery was now about equal. McClellan had lost about 40 pieces and Lee had gained about the same number by the arrival of Holmes, as also some from other sources. Malvern Hill being the last point favorable for an attack, Lee put forth every effort to concentrate there his whole force and give McClellan a final and crushing blow.

Malvern Hill is an elevated plateau overlooking the James River, about a mile and a half by three-fourths of a mile in area,

well cleared of timber, and with several converging roads running over it. In front the ground slopes gradually, giving clear range for artillery to the woodland from which the enemy emerged. The left end of this ridge—the hill proper—slopes off abruptly to the bottom land of the James River, distant at this point about a mile.

Upon this plateau the army took up its line of battle. Porter's Corps was on the left or hill proper, then Heintzelman, Sumner, Franklin and Keyes in the order named, except that Couch's Division, of Keyes' Corps, was between Porter and Heintzelman.

From the position of the enemy his most obvious lines of approach would bring him first in contact with the left, and here the Union lines were strengthened by massing the troops and assembling batteries of the Artillery Reserve. The divisional batteries were posted with their divisions, together with some of the Reserve batteries. There were no intrenchments of any kind; all the fighting was done in the open fields.

A little before midday the enemy commenced feeling with artillery and infantry for a weak place along the front, and soon thereafter commenced a series of assaults in force, each one more powerful than the preceding, but always repulsed. "At six o'clock the enemy suddenly opened upon Couch and Porter with the whole strength of his artillery, and at once began pushing forward his columns of attack to carry the hill. Brigade after brigade, formed under cover of the woods, started at a run to cross the open space and charge our batteries, but the heavy fire of our guns, with the cool and steady volleys of our infantry, in every case sent them reeling back to shelter, and covered the ground with their dead and wounded."

Lee, describing these assaults, says: "Several determined efforts were made to storm the hill at Crow's house. The brigades advanced bravely across the open field, raked by the fire of a hundred cannon and the musketry of large bodies of infantry, driving back the infantry, compelling the advanced batteries to retire to escape capture, and mingling their dead with those of the enemy. For want of concert among the attacking columns their assaults were too weak to break the Federal lines, and after struggling gallantly, sustaining and inflicting great loss, they were compelled successively to retire." He gives as a reason for the want of concert between his columns, the wooded and unknown nature of the country, the same difficulty experienced by the

Union troops throughout the campaign. For the same cause he says he was unable to bring up his artillery in a concentrated form to oppose that of his adversary. His chief of artillery says: "Too little was thrown into action at once; too much was left in the rear unused. We needed more guns taking part, alike for our own protection and for crippling the enemy."

Just as the sun was setting the enemy made his last and most determined assault, in which he brought up his entire strength. This assault fell entirely upon Porter. The corps to his right were unable to afford him immediate assistance, and it seemed as though he must give way to the overwhelming pressure against him. But at this critical moment the batteries of the Artillery Reserve were pushed forward by Colonel H. J. Hunt, who opened with every piece for which he could find position. An almost continuous battery of about sixty guns was thus opened on the enemy, crushing him back into the woods, from which he did not again return.

This was the most marked instance during the war of the power and effect of artillery when brought in mass against the enemy at the crisis of a battle. There were many instances in which batteries were concentrated and demonstrated the effect of concentrated fire. At Shiloh, for instance, fragments of batteries were assembled and formed a cordon of guns behind which the discomfited divisions of the Army of the Tennessee took shelter for the night and awaited reinforcements. At Stone's River the batteries, having through disaster to the infantry become shaken loose from the brigades to which they were attached, gathered themselves together and by their united fire held the ground and saved the Army of the Cumberland from further disaster. At Chancellorsville, batteries were united and stayed the enemy, who were in a fair way of pushing Hooker's army back into the Rappahanock. But in no instance were they brought up in mass, as at Malvern, to snatch victory from imminent defeat.

On the previous day, when the troops were first arriving upon the hill at Malvern, a heavy column of the enemy under Holmes, approaching unobserved by the river road, appeared on the low ground to the left and rear of the hill. When within easy range he opened with one of his batteries upon the troops visible on the hill. Almost instantly several batteries of the Artillery Reserve, which happened to be there, opened fire on this battery

and in a few minutes mashed it to pieces, compelling it to abandon two of its pieces and all of its caissons, with nearly all of its horses killed or disabled. The fire upon the column caused it to retire hastily, not again to be heard from in that quarter.

Not more than one-third of McClellan's force was actually engaged in the battle of Malvern Hill, and notwithstanding the decisive repulse that had been given to the enemy, he immediately commenced withdrawing his corps, continuing his march to Harrison's Landing, eleven miles further down the river. The enemy as hastily withdrew in the opposite direction, both sides leaving their dead and wounded on the field.

This, it may be remarked, was the only battle of the Peninsular campaign in which the entire army was drawn up in continuous line of battle, and here only about one-third of it was engaged.

By the evening of the 2d of July the whole army had arrived at Harrison's Landing, and taking a strong position about Westover, secured itself by formidable intrenchments. Lee withdrew to his fortifications about Richmond, and thus ended the Peninsular campaign of the Army of the Potomac, of which the foregoing are among the most prominent incidents in which the artillery took part. There were scores of minor occasions in which batteries took active part, but they are too numerous for mention in a paper of this kind.

The losses of the Army of the Potomac from the 26th of June to the 2d of July were 1734 killed, 8062 wounded, and 6053 missing, making a total of 15,849. Many of those reported as missing were wounded and left on the field, and should be included among the wounded.

Lee's losses, as compiled from the official reports of his subordinates, were, for the same period, 2836 killed, and 12,946 wounded, in all 15,882. His missing were not nearly so numerous as were those of McClellan.

The loss by sickness in the Army of the Potomac was great, and altogether it was very much reduced in numbers. At Harrison's Landing it was joined by Shields' Division from Banks' Corps, making twelve divisions in all, numbering not above 80,000 men, a force manifestly inadequate to the task of capturing Richmond.

McClellan continued to plead with the Washington authorities for additional troops, still harboring a plan for advancing on

Richmond via Malvern; and on August 5th, he actually did re-occupy this position with Hooker's and Sedgwick's divisions, preparatory to a general advance of his whole army. But events happening on the Rappahannock, with an army under Pope, demanded the presence of the Army of the Potomac in that quarter and it was withdrawn from the Peninsula. By the middle of August the whole of it had left Harrison's Landing.



## THE EVOLUTION OF HOSPITALS AND OTHER PROVISION FOR WOUNDED.

By MAJOR CHARLES K. WINNE, U. S. A.,

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THE literature relating to the inception and development of hospitals, and its kindred subject, aid to wounded in war, is so extensive, that in a little sketch or compilation of this kind, only a few sentences can be devoted to the salient points of each epoch, as military medicine dates from the early dawn of history. Æsculapius, who, according to the beautiful Greek myth, sailed with Jason and the Argonauts in search of the Golden Fleece, and Machaon, who, summoned by Agamemnon, dressed the wounds of Menelaus. "Far on the ringing plains of windy Troy," though barbarians, were yet the prototypes of the surgeons of the 19th century.

As from prehistoric times men have been fighting animals, so the same need of aid in war or transport from the field existed among our primeval ancestors as among us. The way and the method varied only according to the culture of the races engaged, —from a rude travois, or a shield, as described in the old northern Sagas, to an ambulance.

Savages universally endeavor to carry off their dead and wounded, and although it must be remembered this is done more to avoid the disgrace of allowing their injured to fall into the hands of the enemy, than from any fine feelings of compassion, yet it is interesting to trace this one common purpose through all races and among all peoples, from the brilliant semi-savage of Homer or the ancient Celt of Europe, to the North American Indian and the Aborigines of the African forests.

The rescue and succor of wounded—simply because they are wounded, and entirely irrespective of race or descent—is a development only of a late and pure civilization.

Before the large acquisition and advancement of knowledge rendered possible its differentiation into sciences and professions, the ancient temples were as much the nurseries of medicine as



the sanctuaries of religion. There the sick sought relief from the immortal gods by invocations, and by treatment from the priests, who were partly physicians, and partly empirics.

Medicine thus practised in a semi-fabulous age in Epidaurus and Cos in Greece, where the custom of affixing votive tablets and models to the temple walls originated, was paralleled, in a more authentic period in literature, by the Buddhist priests in India, probably 500 years before Christ, when their oldest treatise on surgery, *The Susruta*, is supposed to have been written.

We know that the science of medicine attained a high degree of perfection among the Egyptians, many of their physicians who are mentioned in the three oldest books we possess,—the Bible, Homer and Herodotus,—being employed in military as well as in foreign service.

These temples—schools of practical medicine in Egypt, India and Greece, were invaluable in their epoch, but although various retreats or “*hospitia*” are mentioned by old writers, yet hospitals for the reception of the sick regardless of condition, for the alleviation of human suffering, did not exist prior to the advent of Christianity.

Fostered by the Church they multiplied rapidly through the then civilized world, many of them claiming a hoar antiquity. One of the first hospitals of which we have knowledge was founded at Cæsarea A. D. 370, another and the most celebrated was founded at Rome in the IVth century, while the Hotel Dieu in Paris, founded by Childebert, dates from the VIIth century, and was erected near the church, “Because the place where the people pray and the place where they suffer are alike the house of God.”

Although Prescott claims that during the Aztec civilization hospitals were established in their principal cities for the cure of sick, and for the permanent refuge of the disabled soldier, yet it is generally conceded that military hospitals proper, owe their inception to the Crusades.

Then, hordes of undisciplined men commenced their wondrous migrations across Europe in the futile effort to rescue the Holy Land, and these multitudes, miscalled armies, were so decimated by plague, leprosy, scurvy and camp or filth diseases, that hardly a tenth part of them ever reached their destination.

At this time military hospitals were first established, principally at Jerusalem, and the great military orders of St. John and

the Teutonic Knights were founded to commence their long career of beneficence and glory, as the knights took not only the usual military oaths, but also vowed to nurse their sick or wounded comrades in arms.

Though the Crusades did not free the Sepulchre, yet their failure eventually resulted in greater freedom for the people and an amelioration of their wretched condition; for charters for free cities and the gradual abolishment of serfdom were wrung from the financial distresses of the nobility resulting from the enormous expenses of the Palestine campaigns.

During the Middle Ages, though the means of destruction increased, the means of aid decreased, or the science of medicine declined. Knowledge seemed to be vanishing in the chaos of crime, ignorance and misery, or was confined to the cloister. There: "One brother could employ himself in transcribing the *Æneid* of Virgil, and another in meditating the analytics of Aristotle, in which he who had a genius for art might illuminate a martyrology, or carve a crucifix, and in which he who had a turn for natural philosophy might make experiments on the properties of plants."

Europe, desolated with pestilence, plague and war, was a pandemonium. Insanity was considered a demoniacal possession, disease was treated as much by magic as by medicine. The whole continent was rent into petty principalities and powers, every kingdom torn by internecine strife. City struggled against city, poison and assassination were prime factors in statecraft, every man's hand was literally against his neighbor, wars were undertaken purely as a means of pillage, conducted without mercy, and ended without honor.

Life in the Middle Ages was one long horror of impending death, and the welfare of the wounded was disregarded in the intense struggle for existence among all classes. Human life was cheap and men were plenty. Germany and Switzerland poured forth their recruits for the Free Companions who could bid the highest, each man content to take the chances of fortune; booty if successful; if defeated and captured to be promptly hung or butchered if too poor to offer ransom; if sick or abandoned, to crawl to the friendly shelter of a monastery, or die neglected by the roadside—worthless and discarded when no longer able to wield a pike. The old chronicles and the life of the Chevalier Bayard are full of such incidents.

The entire neglect of the medical care of armies at this time is sufficiently shown by the fact that "no mention is made of field hospitals or army surgeons until about the 15th century, when field surgeons were appointed for the use of the commanders and principal officers, but not for the service of the field hospitals."

One of the most justly celebrated surgeons of the 16th century, Ambroise Paré, who served with Francis I., in the Piedmont campaigns, did much to alleviate the suffering attendant upon the rude surgery of his age. He was the first to treat gunshot wounds rationally, instead of applying boiling oil to neutralize the supposed poison of the gunpowder; and his introduction of the ligature in hemorrhage rendered amputation practicable, doing away with the ancient practice of searing the stump with the actual cautery.

The frightful mortality in some of the later wars on the Continent caused by insufficient or improper food, hardship and exposure, and ignorance of the first principles of sanitation, which resulted in disease for which no hospital provision was made, may best be exemplified by the simple statement that Gustavus Adolphus, who commanded an army which, for perfect discipline, entire absence of all marauding or excesses, and hardihood in war, had never been equalled in Europe, and which was in striking contrast with the barbarians led by Tilly, who sacked Magdeburg, or the mercenaries raised by his great antagonist Wallenstein, is charged with having lost in six months 14,000 men from disease alone.

History, draped in her ceremonial robes, describes decisive victories and the ultimate result of campaigns, but does not mention the cost of blood and tears by which they were won, nor enter into the familiar details which make all men kin.

Even Carlyle does not give sufficient insight into what was done during battle, or what was attempted in the effort to save life after battle, in his microscopic study of Frederick the Great, in his attempt to rehabilitate the moral character of one on whose head as Macaulay wrote: "is all the blood which was shed in a war which raged during many years and in every quarter of the globe, the blood of the column of Fontenoy, the blood of the mountaineers who were slaughtered at Culloden," for whom "black men fought on the coast of Coromandel, and red men scalped each other by the Great Lakes of North America."

We know, however, from other sources, that the Seven Years' War cost Prussia 180,000 men dead from disease alone, not including those killed in battle, or those who died of wounds afterwards.

It has been asserted on the authority of certain antiquarians that Cæsar, when opening a campaign, sent his sick and wounded into depot, and that Severus directed that his column should be accompanied by chariots to pick up the wounded and those who had fallen out by the way—being in one sense, therefore, as has been remarked, the originator of the first ambulance train—but though other Roman generals followed in the lines laid down by them, and certain inscriptions discovered in England show that possibly the Roman armies had a crude medical staff and a primitive field hospital or *Valetudinarium*, yet the real origin of field hospitals with a separate distinct corps, furnished with all requisite appliances, as a necessary adjunct of all armies, dates only from the close of the last century.

No transport system was known during our Revolution, nor could one, for financial reasons, have been carried out during that war, which was fought out by hastily raised levies or by temporary drafts from the militia, both classes, as a rule, almost destitute of everything, clothing, food, arms and ammunition.

Sharing in the general poverty, the Medical Department was poorly officered as a rule, and badly equipped; the sick were crowded into temporary wretched huts or makeshift hospitals, and suffered a consequent high rate of morality.

To Larrey, a distinguished surgeon of the Consulate and First Empire, who entered the army in 1792 and who was present in every campaign which remodelled Europe, from the Pyramids to Austerlitz, from Moscow to Waterloo, is due the distinction of organizing and perfecting the first flying or field hospital. Commenced in the Italian campaign, remodelled to a camel corps in Syria to meet the exigencies of service in the desert, again altered for European campaigning, his plans not only met the warm approval of Napoleon, but added additional courage to the troops by the assurance of aid if required.

Percy, another famous French surgeon, second only to Larrey, proposed and instituted a special corps of *brancardiers* or stretcher bearers to carry the wounded from the field during the time of action.

Previous to this time the wounded of all armies were, as a rule,

left upon the field where they had fallen until after the termination of the engagement; which necessarily resulted in the loss of many lives which a speedier rescue might have saved. During the interval of from one to two days between the advance of the troops, and the succor of the wounded, various atrocities were committed by wretches who followed the troops for pillage.

In the words of Kinglake: "The armies of Europe have been followed by a hateful swarm, who make it their livelihood to hover upon the march of the regiments, alighting at last upon a field of battle that they may rifle the dead and the wounded.

"And then comes, too, that other and yet fouler swarm which strip the dead of their clothing and accoutrements with so strange a swiftness, that a field which was speckled and glittering at the close of the battle with the uniforms of prostrate soldiers, is changed of a sudden to a ghastly shamle with little except maimed and dead horses and the buff naked corpses of men to show where the battle has raged."

The student of English literature will remember many illustrations of these "Spoilers of the Slain" in Smollett's very coarse novel "The Adventures of Ferdinand Count Fathom," portraying the brutal manners of a long past age.

When finally taken from the field, the wounded, loaded in such carts or wagons as the country afforded, were taken to the nearest town or city, in which general hospitals were hastily prepared and in which the mortality was appalling. Erckmann-Chatrian in their novels relating to the Napoleonic wars depict the horrors of these convoys and the miseries of these hospitals.

The English wounded during these long years of battle were so transported, and though several admirable plans for their relief were formulated by the most able surgeons of the Peninsular Campaign none were ever practically carried out.

The same state of things existed with us during the War of 1812, a war characterized by one of our historians, as "begun without forethought and carried on without either energy or success."

Our sick and wounded in Mexico had no special provision made for them. The regulation temporary details for field service were taken from the line, and the disabled shipped North as rapidly as possible to New Orleans and Pascagoula Bay. No military hospitals were built, but general hospitals were extemporized from churches, convents and other public buildings.

In that melancholy series of military blunders called the Crimean War, but which was as full of deeds of individual heroism as the old epic poems, the English landed like knights errant upon the grim shores of the Chersonese without means of transport, even the few ambulances they possessed having been left behind, constituting a movable column without the power of moving. Without equipage or subsistence except what the men carried, they crept along the shore dependent upon the fleet for everything. The few wagons found in the Tartar villages were seized, but they had cholera among them when they threw out their first skirmish line on the beach, and the condition of their wounded after their first battle on the Alma was most pitiable.

"The sick and wounded, those suffering from cholera, from broken bones and amputated limbs, had to be carried some miles to the beach under a burning sun, either in blankets slung between two oars, or jolted over tracks deep with sand in the most uncomfortable of all earthly conveyances—Turkish arabas." In addition 500 wounded Russian prisoners were collected near the river, where, almost incredible as it may seem, they were absolutely forgotten for hours. When the allies advanced, these desperately wounded men were left in charge of one medical officer and his servant. They laid unsheltered for three days and nights, with only such care and food as this one officer could give them, until they were finally taken on ship-board.

The same fatality seemed to follow them in the near future, when the famous siege was begun which caused such exquisite misery to both besieging and besieged.

The Russian side of the medal is displayed in "Sebastopol," the realistic novel by Tolstoi, describing that campaign in which he served.

In the Italian campaign of 1859 the medical department of the French army, repeating the experience of the Crimea, entirely failed to meet the exigencies of the service.

In our country, through long years of nominal peace, the Army, insignificant in numbers, was scattered in small posts like infant military colonies along an extensive frontier, with the Indian question ever present. The casualties of the moment resulting from sudden Indian outbreaks or expeditions, were met by temporary expedients; many ingenious appliances for the transportation of the injured having been constructed on the spur of the moment in Florida, in Oregon, or on the Plains.



The outbreak of the Civil War found us absolutely without organization of any kind for taking prompt care of large numbers of wounded. None but those who served in the field then can realize the chaos which existed. Dr. Smart, U. S. A., truly said:

"The medical officer had no control over the ambulances which carried his sick, none even over the selection of the site for his field hospital. He was there simply to render professional assistance to the wounded. Even the medical director—a director in name only—having assigned his officers to the front and rear, took position at the principal depot and there rendered his professional services. He and his officers having arrived at the depots, their efforts might be paralysed by want of co-efficient action on the part of the supply departments.

"The chief quartermaster was charged with the duties which properly belonged to a medical director. He was in truth the chief of the medical department, superintending the removal of the wounded from the field, bringing up their supplies, and establishing their hospitals. Medical officers may be said to have been professional attachés of the quartermaster's department.

"The medical staff was placed in a false position. Its best concerted plans might miscarry by want of support from its actual chiefs, yet in the event of preventable suffering to the wounded it was held responsible by the sufferers and the country."

Dr. Tripler, U. S. A., at that time medical director of the Army of the Potomac, in his report on the Peninsular campaign, attributes the failure of the Medical Department to cope with its task, mainly to its want of organization, and its inability to control even the transportation which belonged to it.

His strenuous zealous efforts to have formed a special corps of stretcher bearers failed, for he could have none detailed in excess of the skeleton number specified in the old regulations.

This unfortunate and yet horrible condition of affairs, with its sequence of avoidable and unnecessary suffering, could not last.

Dr. Letterman, U. S. A., a man of unbounded energy and wonderful executive ability, became medical director of the Army of the Potomac and formulated the plans for field hospitals, ambulance trains, etc., which were finally approved, ordered, carried out, and which, with certain modifications, afterwards became the law.

The ambulance train, the field or division hospitals, and the method of supply, consisting of a movable purveying depot from which supplies were drawn to replenish those exhausted by battle, (the details of which are unnecessary to specify here) were designed to work as a unit, and this result was finally attained. A few ex-



amples of the work accomplished by this system will be its sufficient eulogy.

Antietam gave its first ordeal by battle, Fredericksburg followed, when the wounded were taken from the field and cared for with a celerity never before known. At Chancellorsville, though transportation was insufficient, yet when the Sixth corps charged Marye's Heights and had 800 wounded in less than thirty minutes, still two hours later all the wounded were in hospital under treatment. At Gettysburg "the ambulance organization was intact and such was the perfection of its administration, that on the early morning of July 4th, the day after the battle ended, not one man of the great number who had fallen (over 14,000) was left on the ground," an achievement unparalleled in the annals of military medicine.

Dr. McParlin, U. S. A., who succeeded Dr. Letterman as medical director, stated in his official report of the campaigns of 1864-65, that "tens of thousands of wounded have been carefully, speedily and safely transported from the field of battle to the field hospitals, and from thence to the large depot hospitals, and this has been done without confusion, without hindering the movements of the army, or conflicting with the operations of the other staff departments."

There have been two classic Marches to the Sea. In the one, the story of which has been the delight of scholars for its purity of diction for ages past, the "Ten Thousand" led by Xenophon, suffered terribly from frostbite and snow blindness, and many perished miserably on the way. In the other, which was begun not as a "retreat," but as an "advance," the troops of Sherman, in superb physical condition, well fed, animated by hope and victory, and "led by a general in whom they had unlimited confidence" swung out from Atlanta on their appointed task. The transportation was reduced to a minimum, and consequently the supplies, but the hospital and ambulance organization was perfect. The wounded, though few in number, were well cared for, and the medical director of that army (Dr. Moore, late Surgeon General, U. S. Army) wrote approvingly of the results obtained. From this brief sketch it will be seen that the system originally devised by Larrey and Percy reached its highest state of development in our service, for no army was ever cared for in battle, and after battle, as our troops were in the War of the Rebellion.

At the present time every army in Europe has its ambulances,

meaning by that term, field hospitals complete, with tents, ambulances, wagons, all medical necessities, hospital stores and a corps of stewards or apothecaries, cooks and trained nurses, all belonging to, and forming part of the medical department.

The technique of an engagement, which in the major particular is now identical in all armies, is very simple.

It presupposes trained bearers who belong to the line and perform all company duty. These men, distinguished by a brassard, in time of action carry the wounded to the advanced dressing station, which must be near the front, well under musketry fire. Here the wounded are rapidly examined by a medical officer and his assistants, primary hemorrhage checked, or fractures so dressed temporarily as to render transportation less dangerous or painful. From thence carried by hand to the first ambulance station, sheltered from rifle fire, but exposed to artillery fire. These ambulances are replaced from the main ambulance station as rapidly as filled and the wounded transferred to the field or division hospitals, where wounds are regularly dressed, and all primary operations and amputations performed. From these field hospitals the wounded are transferred in the reserve ambulance train, supplemented by empty wagons of the supply train, bedded with straw, pine tops, leaves, or other available material, accompanied by medical officers, stewards and nurses, *en route* to the depot hospitals. From the depots, which change base according to the movements of the armies, the wounded are finally sent to the large general hospitals elsewhere.

The greater number of the medical officers who distinguished themselves in our war by carrying the operations of their department to a height of usefulness and perfection never before known, and which won the unqualified admiration of Europe, have passed away. It is needless to recapitulate their names. Their monument is perpetuated in the Medical and Surgical History of the War—"Monumentum aere perennius," and as, in the noble words of Lord Bacon, they attained worthy ends and expectations, their memories are cherished in the hearts of their surviving comrades.

## CENTRALIZATION AND DECENTRALIZATION IN ARMY AFFAIRS.

By BVT. LIEUT.-COL. J. G. C. LEE, U. S. ARMY.

QUARTERMASTER'S DEPARTMENT.

IN contemplating the organization of governments, one cannot fail to be filled with profound wonder at the ramifications and complexity of the systems that enter into and go to make up the established whole. So vast is the array, and so infinite the variety of details, that it seems almost impossible that all can tend in one direction and toward a unified head, around which they centre as agents of direction, control and support. And yet so essential is good system, that no body or organization can long successfully maintain itself without well devised rules for its government, and carefully elaborated plans for its protection from assault from without or secret foes within.

With the creation of a government or other organization are brought into existence the several branches of management that to the framers appear best calculated to secure the most favorable results, and these branches in turn devise the systems of their respective divisions and subdivisions down to the remotest point of detail. Subsequently, from time to time, mistakes will be corrected, incongruous features brought into greater harmony, and additional strength and completeness afforded where found to be necessary.

In the march of progress, invention and discovery will be found potent factors, exercising everywhere emphatic influence in the direction of reorganization and reform, and no system whatever can afford to lie idle amidst the ever changing, ever improving, ever advancing order of events. Every organization, and every branch and division thereof must, if its vigorous and influential perpetuity be considered, keep pace with the advance of enlightenment and science, failing which, it will assuredly fall into decay and ultimately into ruin, as will a tree that is continuously deprived of life-giving water.

All systems must necessarily centre in one general head, the

fountain of control, direction and administration. In political government this head is the executive, though behind such executive may stand the source of authority, the law-making power, receiving its credentials directly from the hands of the people. In private matters, the source of control is usually centred in one man, as the executive, often supplemented in varying measure by boards of associates. The main difference lies in the fact that political governments must tread closely the lines of law, whereas private enterprises are more or less a law unto themselves, and are responsible to no other source for the wisdom of their rules, so long as they conform to the statutes of the land.

In their general features, however, both public and private governments partake largely of the same characteristics, and each and all have to travel the same road not only in original organization, but in subsequent efforts toward improvement and success. In all respects one body may beneficially draw upon the experience of others, but it is chiefly through its own needs that the evolution of its best perfection is brought about.

It is to the subject of political government and its application to Army affairs that I briefly draw your attention, with the belief that all of us, one as well as another, must be deeply interested in what so vitally concerns us as defenders of the nation, and what is of vast consequence in its outcome in the future to the nation itself.

I think there exists no diversity of opinion as to the objects for which our Army was created and is maintained; and it may be broadly and confidently asserted that there is no division of sentiment in the belief, that its organization throughout should be capable of affording the best results in time of peace, and of expanding easily, smoothly and adequately to the necessities of a great war. I know it is stoutly maintained, even by able and thoughtful men, that we are, by our very position, safe from attack, and that by our institutions and inclinations we are inhibited from seeking war, desiring no territorial aggrandizement, and having no disposition to oppress or subjugate any other people. But what does the stern hand of history point us to in the past? Human nature has been the same in all ages. The millennium has not yet arrived, nor are the signs promising. And we can no more expect to escape the common lot of nations than the round of the seasons or any other natural law. Immunity from attack does not fall to republics more than to kingdoms or empires.

The common fate of all is strife, combat, success, victory, defeat, and finally disaster and decadence.

Looking then the future squarely in the face, and admitting its possibilities and probabilities, is it not wisdom to emulate the past, and prepare for what is plainly the inevitable, exercising always the strictest economy demanded by existing conditions, but granting unsparingly where the future unity and safety of the country is likely to be imperilled?

I think it may safely be stated that these circumstances have actuated our best statesmen in the past, and I cannot but believe that they will continue to influence those of the present and for all time to come. But the political field is a vast one, and the danger lies that in the infinite number of public matters demanding attention, and the personal needs of members, even so vital a matter as the certainty of national safety may be overlooked. Hence it would seem to be the duty of those to whom is assigned the armed protection of the nation's interests, to point out from time to time, as temperately as possible and as forcibly as may be, the dangers likely to beset the country, and the best measures to be taken to meet them. These measures are of a two-fold character, those of strictly offense and defense, and those of administration purely. The former must be left chiefly to the close student of the science of war in all its branches, who keeps well up with the rapidly advancing improvement in every direction. The latter may be shared in by each and every one of us, with the certainty that the combined experience, comprehension and perspicacity of the many will far excel that of any one man or any one set of men.

If, then, we so far agree, I will feel sure that in what follows I shall in no wise be misunderstood, and that in any difference of opinion that may exist, I shall at least be credited with fairness of motive and a sincere desire to be of real benefit to the service.

In submitting to President Washington a plan for the reorganization of the Army at the close of the Revolutionary War, General Knox, the first Secretary of War, said:

"The strength of the Government, like the strength of any other vast and complicated machine, will depend on a due adjustment of its several parts."

This doctrine appears to have been for a long time the keynote of inspiration of all army methods and management. As the small army grew into larger proportions, it required additional

organization, and step by step our present staff system grew into existence. There may be a difference of views on the subject, but the preponderance of opinion is overwhelmingly in favor of a well-organized staff, whose duty it is, under the direction of the commander, to conduct the details of the several departments. I need not refer further than to the able and exhaustive arguments of the Hon. John C. Calhoun while Secretary of War; of Major-General Macomb when in command of the Army; of the Hon. John Coburn when chairman of the committee on military affairs in the House of Representatives; of General Banning when chairman of the same committee, and of the large number of prominent officers of the Army itself who have from time to time expressed themselves on the subject. The opinion is strong, emphatic, and concurrent throughout, that while a large standing army need not be maintained in this country during peace, there should always exist the means of creating a large force promptly in case of need, and to this end the means of gathering, instructing, equipping and supplying such a force should be at all times immediately available.

I quote a brief extract from Mr. Calhoun's able argument on this point:

"In fact, no part of our military organization requires more attention in peace than the general staff. It is in every service the last in attaining perfection; and if neglected in peace, when there is leisure, it will be impossible, in the midst of the hurry and bustle of war, to bring it to perfection. It is in peace that it should receive a perfect organization, and that the officers should be trained to method and punctuality, so that at the commencement of a war, instead of creating anew, nothing more should be necessary than to give it the requisite enlargement."

It is manifest, then, that the main purpose of our Army, after holding the Indian tribes in proper subjection, is to form the basis of a large force in case of war. The great bulk of an army to take the field against a foe of any consequence, would of necessity come from the militia of the several States, and these, while in part drilled and instructed, would yet have to undergo extensive additional training to fit them properly for the field.

Viewed from this standpoint of paramount importance, the conviction is overwhelming that our Army system from head to remotest point should be simple, plain, comprehensive, easily understood, devoid of too much routine, vigorous and effective.

Such was undoubtedly the view and intention of all the earlier administration of Army affairs, down to the period of the great Civil War, to which time, what is known as "red tape," had been confined within comparatively narrow limits, though even then it had become a by-word for delay and inefficiency. But the enormous work of creating and providing for such a large force in the field, the conditions evolved, the steps necessary to correct this and that evil, all the varying necessities, led to the introduction of many special regulations and orders: and these have followed in increasing numbers down to the present period, to a large extent burdening affairs, complicating the transaction of business, creating unnecessary labor, consuming valuable time, overlooking the all important future, with little or no effort in the direction of simplification, vigor and effectiveness, and apparently regardless of the needs of coming times. To such an extent has this gone on, and so deeply are we besotted with routine and form and voluminous methods, that the wonder is that even with our small army the different departments accomplish the work required, weighed down as they are with a mass of their own absurdities.

With these growing evils is associated what most persons regard as an alarming tendency toward the centralization of the control and management of details, which, it is thought, should claim the profound attention and active effort of every legislator and soldier in the land, that it may be checked and brought within proper bounds, ere by fatal lateness, it leads to confusion, which is sure to be its result at the outbreak of war, if not before.

If asked to particularize, one should perhaps hesitate, feeling that the strong hand of those in power, should they differ with him, might be visited upon him remorselessly. But if actuated by a deep, earnest desire for the betterment of the service, he might straightly point toward almost any one of the great departments of management and answer, *there*.

What might be reasonably, even surely, expected of a manager of a railway of importance who would, in addition to providing ways and means, exercising general efficient control, and gathering the several divisions and departments of his company into such groups as to see just what was going on, and be able to thoroughly regulate affairs, and bring all the parts into utmost harmony and thrift, which are conceived to be his legitimate duties,—who would in addition to this, insist on personally seeing



to all the lesser details of the several divisions and branches, and looking into each and every little question of supply and expenditure, of construction, running trains and auditing accounts? How long could any human brain stand the strain; how soon would disaster surely overtake the man or the road? Or what would be thought of such a manager, with roads running 3000 miles in a number of directions, if he were to bring the superintendents of the various divisions to his office and from there attempt to run the establishment, instead of having them directly on the ground, and personally attending to and exercising supervision of matters as they might arise? Who could best judge of requirements; the man in his office 3000 miles away, or the superintendent on the spot, who would naturally be fully conversant with the situation from continuous close touch with it?

And yet, this is what we see our departments, at Washington, notoriously overburdened and behind-hand, struggling to do; not content with general management, but straining to control details down to the remotest corner.

And what is the result? Subordinates, stripped of all control and responsibility, grow indifferent, indecisive and uncertain, and lose interest in their duties; and instead of being trained to self-reliance, force, promptitude and vigor in the transaction of affairs, they become hesitating, vacillating and ineffective. The training of peace, so necessary for war, instead of being the best is very far from it. And this, added to the intricacies and perplexities of our system, renders the experience of the present of minimum value for the future.

There is no need of particularizing. An officer might be censured for alluding to what he might deem serious defects in his own branch of the service. And yet, who is better able to see shortcomings and defects therein than he? Each must point out what he sees and assist in applying the remedy, or the errors will grow deeper and deeper, and become more and more firmly fixed.

Hence we may not examine existing conditions searchingly with a probe, or dissect them unflinchingly with a knife, while the evil remains and grows, slowly and steadily in general, but at times with a bound, and will continue to grow until some resolutely strong and brave man shall confront it and strangle it, and rear in its stead a noble, solid structure, plain, simple, harmonious, effective, divested of all monstrosities of routine and pon-

derousness of method, and which shall deal with matters directly, clearly and vigorously, and reach results promptly and safely.

The general theory of management of affairs is, that sound principles must underlie the fabric, guiding it to the desired end. The principles of general control should animate the heads of departments, and the systems should be so arranged that they will bring to the chief of every department, information so grouped, that he can see and know at a glance the exact state of the affairs under his control. This would leave him free to consider matters in general, in their wider and more comprehensive scope; to study the larger needs and provide for the best results. He would devolve upon subordinates, within well-defined lines, the exercise of authority and judgment. He would delegate powers to reliable and experienced officers of his department, from whom he would exact steady adherence to his general plan. Thus each would share the responsibility and credit for efficiency in due measure, and while the chief would find himself at the head of a loyal, zealous, vigorous establishment, the subordinate would feel himself an important factor thereof, and lend every particle of his ability and energy toward the best success. And more than this, the subordinate would be gaining in grasp, confidence and power for future broader spheres of action.

Confined within narrow limits as to the exercise of talent, judgment and management, the best of us will become dwarfed and little in our views and actions, while with a fair field for their employment, they grow to unexpected dimensions, and can be relied on to any extent in time of need.

These are points on which persons may greatly differ, but no one man, or any small group of men in this country, in these times, can withstand the views of the many on vital points. The most upright and intelligent officials may become prejudiced, like other men, on questions which touch their professional pride, and it costs them much to recognize their errors. But the preponderance of opinion will be generally found with the right at the last, and will prevail.

I think that, as a rule, officers take the view that the policy of centralization has already too strongly prevailed, and has done much to obstruct the advance of army administration in the direction of vigor and effectiveness. Details of affairs are now largely managed from Washington for the remotest parts of the country, and serious delays arise in matters of importance from

trifling causes. Business is managed more or less by cast-iron rules, rather than in accordance with the flexible conditions demanded by climate, surroundings and necessities. Supervision and control are exercised by eyes and brains at a great distance, instead of by those directly in contact with the varying questions and immediately familiar with the needs and circumstances.

Is it to be wondered at that dissatisfaction, both mute and expressed, exists, and that gradually our methods fall more and more into ridicule?

Take, for instance, the military departments of the Pacific Coast, averaging about 3000 miles from the Capital, and consider that it is held that each and every individual authority for purchase of supplies shall be specifically granted by the Secretary of War. And then think of the delays that unavoidably ensue, first in correspondence, and afterward in obtaining the supplies under existing regulations, and still farther in transporting them to destination.

It will be answered that "this is in accordance with law." The response will be, "law as it may be construed, but not believed by many to be in accordance with its spirit and purpose." The laws say these things shall be done by or under the direction of the Secretary of War, or of the chief officer of the Department of War, etc. But in so vast a field as this country affords, it surely cannot be the intention of the law that each and every case shall go before the War Department for action. Such a course would be to bury it under a mass of details, and divert and distract its attention from more vital and important functions legitimately belonging to it, and to which it should give its vigorous attention. And so, one is impelled to the conviction that the intention of the law is to require the Secretary to properly supervise and control matters, but to leave him free to delegate certain powers, not to one alone, but to many subordinates, in such measure as he shall deem best for the widest good.

Patriotism, wisdom, experience, integrity, watchfulness and zeal, are not by any means confined to any one officer, but notably exist throughout the Army. Powers may quite as safely be delegated to one officer of known prudence as to another. Hence there appears to be no good or sufficient reason why matters shall be controlled and decided down to the farthest point of detail by heads of departments, while there seems to be good reason for

leaving such details in due measure to subordinate officers of ability and experience.

The array of arguments in favor of separation of the sword and purse are not lost sight of, nor are they now more applicable than they have been in the past. For long, long years the exercise of a certain discretion on the part of commanding officers in the matter of expenditures has been customary, and the Regulations admit the principle in more places than one. This is now denied by some of the departments, not by an order from the War Department to all the Army (for it is not held to throughout), but by internal pressure on the officers of such departments, often it is thought to the detriment of the service and the efficiency of the officers themselves.

And what is the result of all this? On the one hand, the disbursing officer is denied credit by the head of his department for expenditures made in pursuance of the order of his commander, and hence hesitates to obey the order with alacrity, and seeks to have the authority emanate from a source that he feels will be admitted as competent, while, with soldierly feeling, he is really desirous of obeying his superior promptly. On the other hand, should he refuse to carry out such order, he exposes himself to the humiliation, and possibly the punishment of a court-martial, from which the chief of his department is powerless to protect him.

Does it not seem that all these opposing features should be reconciled, and the road of each and every officer made clear and plain?

That oppressive and hindering methods obtain in many of the departments, there is much evidence to support, and that rigid rules are perplexingly brought to bear on minor matters of detail wherein the variations of circumstance are infinite and should be left very largely to the judgment of the officer on the spot cognizant of all the facts, without the time and labor consumed in making voluminous reports, which after all cannot convey all the shades of facts and conditions.

Of course, distant parts of the country are brought into close relationship by the telegraph and rapid mails, but the former is too expensive for extensive use, and the latter too slow to provide for the more distant portions of the country.

It, therefore, seems to me, upon the most profound consideration of which I am capable, that our different systems are suscepti-

ble of great improvement in many respects, and chiefly in the direction of decentralization and unburdening what seems to me a too ponderous and elaborate routine.

No thoughtful person will underrate the difficulty of adjusting the several parts of our military system, and its various divisions and departments, so as to secure the best results and maintain proper economy in the use of public funds and property. It is undoubtedly a task of enormous proportions and great difficulty, and demands a wide comprehension of possibilities and requirements. Indeed, any revision of methods should after all be left to several men of known ability, experience and progressive tendencies, and any results of their labors should be carefully and critically studied and revised before being adopted.

I conceive such organization to be one which, arising and centering in the War Department, shall flow outward and downward to the remotest corner, in one unceasing and uninterrupted course of order, precision, and clear definition, through all the spheres of command and administration alike, binding them in close relationship and harmony, yet distinguishing their respective functions, and establishing for each its plain road along which it may tread confidently, fearlessly and trustfully.

It is not wise to belittle the prerogatives of extensive command, or administration; neither is it well to leave too much to discretion which may be exercised unevenly, in different localities, by men holding similar positions.

The duties of each should be limited by well-known bounds, across which no one would be likely to step. And these should govern everywhere alike from head to the extremest outlying point. Officers in command should *command* within their respective bounds, and should be responsible only to their proper superiors for the propriety of their actions. Their legal orders should be obeyed implicitly by subordinates under all circumstances, the consequences thereof, if any, to rest on the commander.

In like degree the head of each of the departments of administration and supply, should hold the chief management of it; be conversant with all its operations in the main; overlook and guide its transactions generally; provide for its efficiency and advancement with the times; all under such freedom from detail as will leave him time to study matters under his control and guidance thoroughly and provide for their best efforts both in war and peace.

Under such general control and supervision of heads of departments, and within well-defined limitations and with the approval of their respective commanders, the chief officers of each, placed in charge of its affairs at headquarters of the several geographical military divisions and departments, should be allowed to exercise control and management within the fields of their respective spheres of action; the lesser details to be again delegated to their proper subordinates, always within well-defined lines.

The sphere of action, authority and responsibility of each step in the outward and downward direction to be plainly stated, that each and every person might know just where his powers and duties began and ended.

It will perhaps be said that such a system would expose the regular appropriations to too great danger from incursions from too many sources, and that to make sure they are not exceeded, only one should have supreme control of them. But it must be borne in mind that they are always under the control of the Secretary, to whom they are intrusted by Congress, and who will ever have the power to prescribe the limitations suggested, and to require such reports as will enable him to keep that matter well in hand.

Again it will be argued that such is just what is being done. And this may be to some extent admitted, but when the many join in the opinion that the restriction and centralization have reached the danger limit, and proven injurious, one may well ask whether or not the time has come for reformation.

The subject is not one to be touched upon lightly or without intense interest. No personal or selfish considerations should influence us to its study or to any suggestion of change. Only that highest good that each and all of us must earnestly desire for our profession and country will excuse trenching upon existing methods, at any time, but this should surely warrant it at all times, and justify each and every honest effort in that direction.

## THE SUMMARY COURT.

By R. MCKINLAY POWER, M. A.,

OF THE NEW YORK BAR.

"That a punishment may not be an act of violence, of one or of many, against a private member of society, it should be public, *immediate* and necessary, the least possible in the case given; proportionate to the crime, and determined by the law."—BECCARIA on Crimes.

DUE process of law, or, in the language of the Constitution, the law of the land, is proverbially and provokingly slow, and the "law's delay" has become an universal reproach. All the world knows to what weary lengths cases will sometimes drag themselves out, making trials a mockery and too often, alas, defeating the ends of justice. The system of criminal jurisprudence in America is peculiarly favorable to procrastination, and disagreements of juries, stays of proceedings, motions in arrest of judgment, appeals and new trials are always at the command of the accused to stay the wavering hand of justice. Delays, as every lawyer but too well knows, are always to the benefit of the defendant, and his chances of ultimate acquittal are in direct proportion to their number and duration.

But not alone in the civil or municipal law does this evil exist: in large degree it infects the law military, and in the law military delays are a thousand fold more dangerous. The interests of discipline, which is the life of the Army, imperatively demand that the promptest punishment shall follow the commission of crime and that as little time as possible shall intervene between the offense and its punishment. Says the Marquis Beccaria, in his excellent "Essay on Crimes and Punishments," and his philosophic observations are to the point and will bear reproduction here:

"The more immediately, after the commission of a crime, a punishment is inflicted, the more just and useful it will be. It will be more just, because it spares the criminal the cruel and superfluous torment of uncertainty, which increases in proportion to the strength of his imagination and the sense of his weakness; and because the privation of liberty, being a punishment, ought to be inflicted before condemnation, but for as short a time as possible. \* \* \* The degree of the punishment, and the consequences of a crime, ought to be so contrived as to have the greatest possible effect on



others, with the least possible pain to the delinquent. If there be any society in which this is not a fundamental principle, it is an unlawful society; for mankind, by their union, originally intended to subject themselves to the least evils possible. \* \* \* An immediate punishment is more useful, because the smaller the interval of time between the punishment and the crime, the stronger and more lasting will be the association of the two ideas of *Crime* and *Punishment*: so that they may be considered, one as the cause, and the other as the unavoidable and necessary effect. \* \* \* It is, then, of the greatest importance that the punishment should succeed the crime as immediately as possible, if we intend that, in the rude minds of the multitude, the seducing picture of the advantage arising from the crime should instantly awake the attendant idea of punishment. Delaying the punishment serves only to separate these two ideas; and thus affects the minds of the spectators rather as being a terrible sight, than the necessary consequence of a crime, the horror of which should contribute to heighten the idea of the punishment."

Indeed, I greatly doubt whether crime be not more effectually prevented by the promptness of punishment than by either its certainty or severity.

One of the most beneficial and useful measures in the interest of Army discipline and Army reform which the Congress of the United States has enacted for many years is the "Act to promote the administration of justice in the Army." It was approved by the President on October 1, 1890, and took effect from its date. Such legislation has long been demanded, and it was an admitted necessity in order to effect a greatly needed reform in the administration of military justice by largely ousting the jurisdiction of the cumbersome garrison and regimental courts-martial in the adjudication of those numerous petty offenses known to the military code, and good order and military discipline must be the result of the change. In England the summary court-martial has long been an established tribunal, and in the United States Navy there is a similar court, although the latter is closely analogous to the garrison court of the Army. The Act of October 1, 1890, is brief, and it substantially provides: That hereafter in time of peace all enlisted men charged with offenses now cognizable by a garrison or regimental court-martial shall, within twenty-four hours from the time of their arrest, be brought before a summary court, which shall consist of the line officers (*Sic in the roll*) second in rank at the post or station or of the command of the alleged offender, and at stations where only officers of the staff are on duty, the officers second in rank shall constitute such court, who shall have power to administer oaths and to hear and determine

the case, and when satisfied of the guilt of the accused party adjudge the punishment to be inflicted. There shall be a summary court record-book or docket kept at each military post, and in the field at the headquarters of the command, in which shall be entered a record of all cases heard and determined and the action had thereon, and no sentence adjudged by said summary court shall be executed until it shall have been approved by the post or other commander: *Provided*, That when but one commissioned officer is present with a command he shall hear and finally determine such cases as require summary action: *Provided further*, That the President be, and he hereby is, authorized to prescribe specific penalties for such minor offenses as are now brought before garrison and regimental courts-martial. *Provided further*, That any enlisted man charged with an offense and brought before such summary court may, if he so desires, object to a hearing and determination of his case by such court and request a trial by court-martial, which request shall be granted as of right, and when the court is the accuser the case shall be heard and determined by the post-commander, or by regimental or garrison court-martial: *And provided further*, That post and other commanders shall, on the last day of each month, make a report to the department headquarters of the number of cases determined by summary court during the month, setting forth the offenses committed and the penalties awarded, which reports shall be filed in the office of the judge-advocate of the department.

It is not my purpose in these limited pages to write a legal treatise upon the Summary Court thus created, but merely to present a few desultory notes which may be useful in the proper construction of the law. The Act is a legal and constitutional measure. Like all penal statutes it must be strictly construed, and its requirements exactly observed to insure the legality of proceedings under it.

When the Act of October 1, 1890, took effect, the jurisdiction of garrison and regimental courts-martial over minor military offenses virtually ceased, and all offenses theretofore cognizable by either of these courts are now cognizable solely by the summary court, save only in certain specified cases or contingencies. These contingencies are: 1. When the enlisted man who is charged with an offense and is brought before the summary court objects to a hearing and determination of his case by such court and requests a trial by court-martial, which request shall

be granted as a right ; and 2. When the court is the accuser the case shall be heard and determined by the post commander, or by regimental or garrison court-martial. The Act is mandatory, and except in these two instances the jurisdiction of garrison and regimental courts-martial is completely and effectually ousted. A plea in bar of a trial before a garrison or regimental court-martial in the first instance that the offense was one cognizable exclusively by the summary court would be a good one and would necessarily be sustained. When the court is the accuser the law contemplates that the case shall be heard and determined by the post-commander ; and, as the design of the law is to secure the prompt punishment of all minor offenses, garrison or regimental courts-martial should be appointed only when good and sufficient reasons exist why the post-commander cannot act as the court. It is held that an officer cannot act as accuser and court in the same case ; and when the post or other commander is the accuser, and the only officer present, the case must necessarily go to a regimental or garrison court-martial. This is not confined to offenses committed in the presence of the court (Decision, Circular No. 1, Headquarters of the Army, A. G. O., February 9, 1891). Where in a proper case an offense triable by the summary court is sent for trial before a garrison or regimental court-martial, it should affirmatively appear of record that it was upon the request or demand of the accused, or that the summary court was the accuser. It is to be observed that the law makes no provision for relieving the officer who is made the summary court from the judicial duties imposed upon him by statute.

Can a summary court legally hear and determine cases at other times than " between the hours of eight in the morning and three in the afternoon," or, in other words, do the restrictive provisions of the 94th Article of War apply to the courts created by the Act of October 1, 1890? I am very clearly of the opinion that these provisions do not apply to such courts. It would, I submit, be doing violence both to the spirit and obvious intent of the law to hold that limitations such as these must be annexed to the sessions of summary courts. These courts are the creatures of special statute ; they are not the *appointment* of any officer within the meaning or terms of the said 94th Article, and the Act creating them has vested the judicial function in a designated officer as an incident of rank to be exercised by him at all times. The Act provides that all enlisted men charged with of-

fenses cognizable at the date of its passage by a garrison or regimental court-martial shall, within twenty-four hours from the time of their arrest, be brought before a summary court, and I apprehend that at any hour after the arrest the case may be so heard and determined. Nor is there any legal objection to holding such courts on Sundays or public holidays. General courts-martial would not be illegal if held on such days; but so long as these days are deemed in law to be *dies nefasti* (as distinguished from *dies fasti*) the better practice, despite the direction in the Act touching the time of arraignment, would undoubtedly be not to hold court upon them. Besides, in time of peace there can be no military necessity for so doing.

No sentence adjudged by a summary court shall be executed until it shall have been approved by the post or other commander. The act confers no authority upon any officer to modify or remit the sentence, and the post or other commander possesses no power so to change a penalty once adjudged by the court. The exercise by him of such authority is *ultra vires* and entirely illegal. Under the Act the post or other commander may either approve or disapprove the sentence: that is the limit of his functions. With the quantum of punishment he has nothing to do, that being the peculiar province of the court to determine. It follows that a recommendation to clemency made by the court would go for nothing. Its reason for making the recommendation would of itself be valid ground for a more lenient sentence. The President of the United States, under his general pardoning power, is the sole authority competent to exercise clemency in the case.

It is not necessary under the Act to issue formal orders of promulgation of the sentences of summary courts, the only requirement of the statute being that on the last day of each month post or other commanders shall make a report to department headquarters of the number of cases determined during the month, which report shall set forth the offenses committed and the penalties awarded. The prisoner should be at once apprised of the penalty adjudged by the court, subject only, of course, to the approval of the post-commander.

Instructions touching the *modus operandi* of the Summary Court Act were published, by direction of the Secretary of War, for the information and guidance of all concerned, in General Orders, No. 137, Headquarters of the Army, A. G. O., Decem-

ber 3, 1890. These instructions concisely cover the procedure in detail, and they prescribe, in brief, (I state them by way of recapitulation) that when charges are preferred against enlisted men for offenses heretofore cognizable by garrison or regimental court-martial, they will be laid before the post-commander, who will cause the accused to be brought before the summary court within the statutory time. Here they will be arraigned and allowed to plead, according to the practice of courts-martial. If an accused does not demand a removal of his case to a regimental or garrison court-martial, or if, being a sergeant, he does not object to trial by inferior court-martial, or if he does not object to be tried by the officer second in rank on the ground of his being the accuser, or if he does not plead guilty, witnesses will be sworn and testimony heard, the accused being permitted to testify and make a statement in defense; but the evidence and statement will not be recorded. When the summary court shall have arrived at a finding and judgment, the "summary court record" book will be laid before the post-commander for his action, which also will be entered in the record book, dated and signed. When a case is heard by the post-commander, the proceedings will be recorded in the same book. No other record of the proceedings will be kept. The trial of men before summary courts will not be published in orders.

The machinery of the law is simple, and simplicity no less than celerity was the design of the lawgivers in framing this statute. Little clerical work is involved in the proceedings of the court, and the keeping of the summary court record-book or docket, which the law requires to be kept at each military post, and in the field at the headquarters of the command, and the making of the monthly report to department headquarters, are the sole labor involved. The War Department has accordingly held that the necessary summary court writing can be done through the "necessary clerks in the adjutant's office," as authorized in General Orders, No. 129, of 1890, from the Headquarters of the Army, A. G. O. In that way a clerk can be supplied "when actually required." (Decision, Circular No. 1, Headquarters of the Army, A. G. O., February 9, 1891.)

In the several States of the Union, statutes take effect at various dates, and the period of time varies considerably. Thus, in the State of New York it is provided that every law, unless a different time shall be prescribed therein, shall take effect on and

not before the twentieth day after the day of its final passage. (Rev. St. I., 157.) The statutes of Congress, however, take effect from their date. The *Act to promote the administration of justice in the Army* accordingly took effect on October 1, 1890, and from that date it was operative at every military post in the Army. The proviso in said Act contained "that the President be, and he hereby is, authorized to prescribe specific penalties for such minor offenses as are now brought before garrison and regimental courts-martial" does not postpone the operation of the statute. The authority thereby vested to prescribe specific penalties is discretionary with the President, and the prescription of such penalties is not a condition precedent to the operation of the law, and without it the statute is in full force and effect. The punishments which may now be lawfully imposed by garrison and regimental courts-martial may likewise be adjudged by the summary court until the President be pleased to prescribe specific penalties, and under the 83d Article of War no garrison or regimental court-martial has power to inflict a fine exceeding one month's pay, or to impose an imprisonment, or put to hard labor, any non-commissioned officer or soldier for a longer term than one month. A properly graded and uniform scale of penalties for all military offenses (and for the adoption of such a code the writer pleaded in his article entitled "A Penal Code for the Army" in the eighth volume of this JOURNAL), has long been a serious desideratum, and it is hoped the President may exercise at an early date the authority which the law has specifically conferred upon him.

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Since the above was written, the President of the United States, in accordance with the Act of Congress approved September 27, 1890, has been pleased to establish, for the government in time of peace of all courts-martial, limits to the punishment of enlisted men, and regulations governing the same. The President's order takes effect on March 28, 1891, and is published to the Army in General Orders No. 21, Headquarters of the Army, Adjutant-General's Office, February 27, 1891. Section five of the order declares that summary courts are subject to the restrictions named in the 83d Article of War. Soldiers against whom charges may be preferred for trial by summary court shall not be confined in the guard-house, but shall be placed in arrest in quarters, before and during trial and while awaiting sentence, unless in particular cases restraint may be deemed necessary.

## RANGE AND POSITION FINDING.\*

A DISCUSSION AS TO THE RELATIVE MERIT OF THE SYSTEM  
OF OPERATING GUNS OF A DEFENSE BY THE METHOD  
OF SQUARES AND BY THE SYSTEM  
OF POLAR COÖRDINATES.

BY CAPT. E. L. ZALINSKI, U. S. A.,

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WITH the new armament which we are about to have, we are confronted with various new problems involved in the question of its effective use. These problems, whilst they have undoubtedly been considered by our officers, have not received that definite solution which can only come from direct practical experience.

This may be said to be the case even abroad, in those countries where the existence of suitable armament and the spur of ever present and direct possibilities of war exists. But the solutions arrived at and methods adopted, whilst far in advance of anything yet tangible evolved in the United States, still leave something more to be desired.

The determination of the best methods of directing the fire of modern artillery against moving targets is fraught with difficulties. To fire accurately and rapidly at a moving target is difficult, even when the field of view is unobscured. But when the view is obscured by smoke, or when the target cannot be seen under any circumstances from the firing point, the difficulties become greatly enhanced.

The fire of guns of the larger calibres, is, at best, slow. The expense of each round is considerable. This, and the possibility of the target moving swiftly and remaining under fire but a short period, renders it important to direct the fire of the guns with certainty and all attainable celerity.

A suitable system of Range and Position Finding must be resorted to. It is not sufficient to locate at any instant the po-

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\* Read before the West Point Branch, M. S. I., December 5, 1890.



sition of the target in the harbor. It is also necessary to give this information at each gun, in such form that it may be utilized without an instant's delay.

Many instruments have been devised which successfully give the locus of a target. Time will not admit of detailed description of these. They all attempt a mechanical solution of a triangle, obtaining thereby the length of one of its sides. They may be classified into two classes, viz., horizontal base-line and vertical base, or depression range-finders. Each has its advantages. The horizontal base-line instruments may be used on any site, and permit the use of a long base-line. They require the coöperation of two observers, one at each end of the base-line. They labor under the disadvantage of the two observers not always being able to direct their respective instruments on the same object and at the same time. Where a number of vessels are concerned of the same type, it is difficult to indicate to both observers which one is to be tracked or located. What may appear to be the first, second, or third in order, to one observer, may appear in an entirely different relative position to the other. Serious errors obtain in this way and the results are not infrequently erroneous and misleading.

The depression range-finder, dependent on obtaining the angle of depression, can only be used in sites where considerable elevations above the water level are to be found. This limits its use to comparatively few sites on the Atlantic coast, as no position less than one hundred feet above water level can be considered suitable.

With this class, no mistakes need be made as to the *direction* of the target, but errors as to *range* are liable. Particularly where there is a high sea, or where a vessel is moving at great speed, producing a wave of variable height, it is difficult for the observer to direct the cross lines of his telescope accurately at the intersection of the normal water level with the bow or sides of the ship. The percentage of possible error decreases with the increase of height of the instrument above water level. The English have in use the depression range and position finding system of Major Watkin, and claim that the results obtained therewith, in the hands of trained observers, are entirely satisfactory. They are fortunate in having many sites which are at considerable heights above water level.

Having obtained the locus of a target, it is necessary to trans-

late this result in such way as to be immediately available at the guns. Two general ways of solving this problem are proposed, one by a system of squares and one by polar coördinates. The former gives the approximate distances and positions, and that indirectly and slowly, requiring the intervention of a number of operators; the latter gives it rapidly and directly, without the intervening personal operators and with a much nearer approximation to accuracy.

The problem has been carefully studied abroad, and the system of squares was at first used, but after much practical experience, it has been abandoned for systems involving the use of polar coördinates.

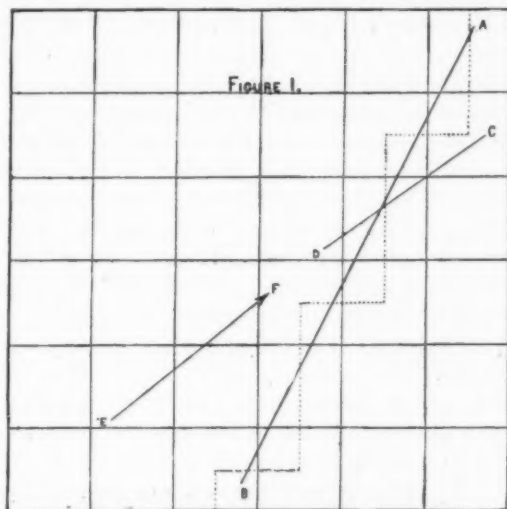
That a system giving polar coördinates will produce suitable results and is of great practical value, is indicated by the fact that the English Government have paid £25,000 to Major Watkin, the inventor of their system. This system was devised and adopted after considerable practical experience in the use of the systems of squares.

It is assumed that the system of squares may be used in connection with the simple range-finding system. The range being found by ordinary range-finding devices, and the number of the square being ascertained, this number is to be telegraphed to each battery. After this telegram is received, the number of the square must be referred to a table, and the corresponding range and azimuth-angle must be ascertained therefrom. After this, the gun may be laid. But this does not give the information necessary for making allowance in changes of range, or direction, or both, which occur during the time of flight. A chart must be at hand, and the course of the ship may be plotted; but even with this, unless the speed of the moving target is also telegraphed, it is not possible to draw any correct conclusions at the firing point, as to the allowances to be made in range and deflection for the movement of the target. The moment when the firing is to take place must then also be determined and acted upon at the observing station.

As the gun is pointed at the centre of a square (presumably of one hundred yards side), the point aimed and fired at may be fifty yards from the position of the target, as it may not choose to pass through the centre. Even if smaller squares are used, the target may still be some distance from the point aimed at. Examination of the diagram in Fig. 1, will show some of the diffi-

culties and errors which are likely to occur by using the system of squares. The full line shows the course of the vessel. The dotted lines to the centres of the squares are the ones which the commander of the battery would make, if he plotted by the number of the squares telegraphed to him from the observing station.

It is clear that information of this character will not suffice to give him a correct idea of the relative direction of the movement of the enemy, nor from it can he even approximate the speed of the target. The speed may be given from the observing station. But as will be seen in the diagram, a direction of movement may



be assumed, from the squares signalled and plotted, of at least 45 degrees with the true movement.

From this information the commander must obtain the changes in range and direction, with reference to the line of fire, during the time of flight. This means the resolution into the two rectangular components. If he does not wait until six or seven squares are passed over, it is quite as legitimate for him to assume the line C. D. as the true line A. B. The only thing that would guide him in the selection of the angle, would be the general direction of the channel, when this is a comparatively narrow one and he is assured that the enemy is constrained to advance directly and without circling about as is sometimes done by an attacking fleet.

If the line of fire is on the line E. F. and the time of flight is, say twenty seconds, the speed of the target being only ten knots, when C. D. is taken as the direction instead of the true one A. B. the allowance calculated for angular displacement will be practically *nil*, and the change of range will be 113 yards. But, in fact, it could be made 80 yards and the change in range 80 yards. Thus the point aimed at will be missed by 80 yards as to direction, and 33 yards as to range.

Even assuming that the direction and speed of the vessel have been rightly guessed at the time that the observing station has communicated the square to aim for, some time must be allowed for making the necessary computations and setting the gun to the resulting elevation and azimuth-angle; and as the vessel, at 10 knots per hour, is going about 340 yards per minute, the square selected must be a considerable distance ahead, and the number of rounds possible, thus directed, will be comparatively few. Before the pre-determined time, the vessel may have swerved from its course sufficiently to be completely out of the square which had been aimed at, and the fire will be entirely thrown away unless the guns are signalled in time to hold their fire and re-point on some other square in advance. In this case, the entire operation of computing the angular displacement must be gone over again and it is not at all certain that the next attempts will be any more successful.

The enemy, knowing the means used for directing the fire, will frequently change his course, not being always constrained by his draft to remain in a narrow channel.

To avoid the necessity of too voluminous tables of squares, it is proposed to limit the table for the large guns only to the channels, whilst the smaller guns must still have tables for the greater part of the field.

This assumes that the enemy's important ships will confine themselves to the channel. But an enemy attacking us, knowing our harbors, as they surely must, will bring a large number of comparatively light draft vessels, which will not be so limited in their field of movement as contemplated. The large guns will have their field of effectiveness very much reduced and limited, instead of having the range extended over all zones within their range.

On the other hand, the use of the system of polar coördinates permits of the intelligent and more exact direction of all of the

guns, over all portions of the field, and permits the setting for displacement of the target during time of flight, to be made rapidly and exactly.

Should a vessel be moving at a rate of only 10 knots per hour at a range of 6800 yards, if attacked by mortar fire, it will have changed its position during the time of flight (50 seconds) as follows :

If moving in the line of fire or if moving across the line of fire — 282 yards.

If moving at an angle of  $45^{\circ}$  with reference to the line of fire :

Change of range — 199 yards.

Change of direction — 199 yards.

If moving at an angle of  $60^{\circ}$  the change would be :

In range — 140 yards.

In direction — 244 yards.

With no other indications given than the number of the squares, it is seen from the foregoing that it is hardly practicable for the chief of the pieces or the commander of the battery to make the necessary allowances for the angular displacement of the target. In positions where the target is not in view, in all cases of indirect fire, the determination of the exact moment when to fire, is impossible at the battery. If a time in advance is designated for the firing, and that time is sufficient for pointing, there is no assurance that the enemy will steer himself for the spot which is expected. The greater the interval between giving the indication and the moment of fire, the greater the chances of the enemy departing from the designated point. This applies particularly to mortar batteries, which will form so important an element of our defenses. Any arrangement to do this at a central station involves making calculation as to allowances in range and deflection for each of the batteries operated by that station, and making setting for each, as to the points where the firing circuits are to be closed. This becomes a complicated problem, when it is considered that each battery may have a different range, a different relative angle of fire and different kinds of guns, involving, even for the same ranges, different times of flight. Where it is possible to make computation for the allowances and the setting for the same independently at each gun, or group of guns manipulated as a unit, the problem becomes much simplified.

The following example of a concentrated fire (Fig. 2) from six points will illustrate the difficulties involved where dependent on the system of squares.

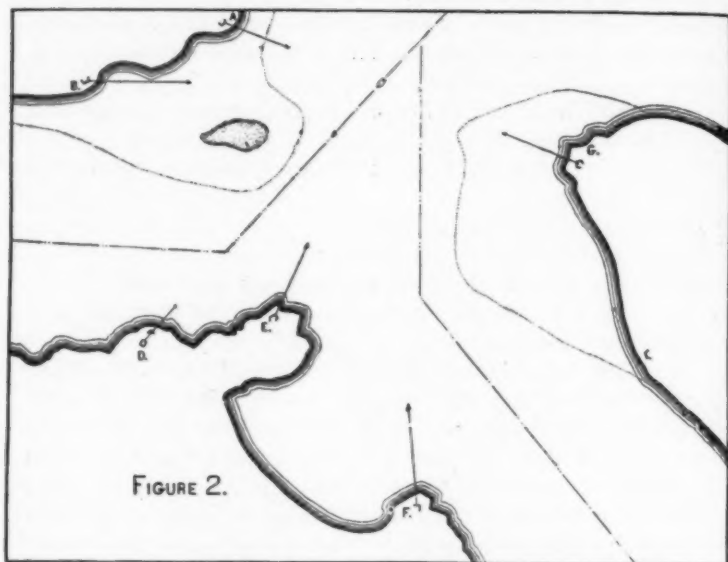


FIGURE 2.

The target is moving at a rate of only 10 knots per hour, in a direction of an azimuth angle of 40 degrees. The firing batteries are at A, B, D, E, F and G. Only two classes of guns are considered, viz.: 8" B. L. rifles and 12" B. L. mortars.

| BATTERY. | GUNS.            | Range of Target. | Azimuth. | Time of Flight. | Displacement of Target at 10 Knots Speed. | Allowances to make ready for. |            |
|----------|------------------|------------------|----------|-----------------|---|-------------------------------|------------|
|          |                  | Yards.           | Angle.   | Seconds         | Yards.                                    | Range.                        | Direction. |
| A        | 8-in. B. L. R.   | 4000             | 300°     | 7.0             | 39  | -7                            | 39 Right   |
| B        | 12-in. B. L. M.* | 7000             | 270°     | 51.0            | 287                                       | -134                          | 220 "      |
| D {      | 8-in. B. L. R.   | 8000             | 220°     | 17.4            | 98  | -98                           | 0          |
|          | 12-in. B. L. M.* | 8200             | 220°     | 41.5            | 234                                       | -234                          | 0          |
| E        | 12-in. B. L. M.* | 6000             | 190°     | 27.0            | 152                                       | -130                          | 76 Left    |
| F        | 8-in. B. L. R.   | 10000            | 170°     | 24.0            | 135                                       | -87                           | 103 "      |
| G {      | 12-in. B. L. M.* | 5000             | 120°     | 35.2            | 198                                       | +34                           | 195 "      |
|          | 8-in. B. L. R.   | 5000             | 120°     | 9.3             | 52  | +9                            | 50 "       |

\* 60° elevation for mortars.

The apparent discrepancy in the times of light is due to the fact that different

At 20 knots speed, which may at times be looked for, these displacements are doubled.

With a speed of 18 knots per hour the displacement of the target required would be as follows :

| Battery. | Displacement. | Correction for Range. | Direction. |
|----------|---------------|-----------------------|------------|
| A        | 71            | —13                   | 56 right   |
| B        | 517           | —333                  | 396 "      |
| D        | 176           | —176                  | 0          |
| D        | 421           | —421                  | 0          |
| E        | 274           | —237                  | 137 left   |
| F        | 243           | —156                  | 182 "      |
| G        | 357           | +62                   | 352 "      |
| G        | 94            | +16                   | 93 "       |

It is seen how varied are the allowances to make, even when the ranges are the same.

To get the correction for range alone, or for direction alone, from the speed of the vessel, it is seen is not sufficient. Double corrections must be made, calculated both from the speed and relative direction of movement of the target *with reference to each line of fire.*

The method proposed by polar coördinates, giving continuous and graphical representation of the distance and direction of the target from the guns, makes it possible for the problem to be worked out rapidly. The resolution into rectangular components is performed automatically and the commander of the battery can work more intelligently and definitely.

The necessity for working out rapidly and with approximate accuracy, is shown, when, in examining the foregoing pages, it is seen what considerable distances the target may move during the time of flight, even when moving at very moderate speeds.

It is assumed that an enemy's ships will not move at great speed whilst attacking, because of the inability to do accurate firing and the dangers of the navigation, *per se* (where large ships are concerned), in addition to the dangers arising from the submarine mines of the defense. His draught may be such as to en-

charges are used in different cases. I took the times of flight from the data of actual firing with the 12-in. R. M. at Sandy Hook.

I purposely gave these apparently anomalous examples to show how many different factors may enter into the problem, making it impracticable to make all of the necessary computations and adjustments, for many different batteries and character of guns, at a central station.



able him to move at full speed safely. He may be willing even to take his chances as to the effectiveness of the submarine mines and run past the batteries at full speed without endeavoring to silence the latter by their fire. It may be that he has been able to destroy the mines and is willing to risk the dangers of the navigation.

It is clearly not impossible that the targets will be moving at considerable speed, and provisions should be made in the system for delivering an effective direct or indirect fire against them in such cases. The system which is capable of doing this will surely be equal to directing the fire against slow-moving or stationary targets.

A system, however, which is only calculated for the latter inferior condition, will be found lacking seriously, should the enemy be more audacious than calculated upon, and if the fixed mines have been already discharged or are not effective.

At 10-knots speed, a vessel will pass over 338 yards per minute, and at 20-knots speed, this amounts to 676 yards, or more than one-third of a statute mile. Unless the method of directing the guns is a rapid one, they must be set at a long distance ahead of the target, even when it is moving at the lesser speed. But very few shots will therefore be possible during the course of the attack. This is particularly the case with guns and mortars, in positions where the targets cannot possibly be seen and they are dependent on the observing station for the indications and initiative of firing.

The longer the time required for ascertaining how to direct the guns, the greater will be the distance in advance of the points on which it must be arranged to fire. The greater this distance in advance, the greater will be the chances of the enemy swerving from his course or changing his rate of speed before reaching the appointed place, thus reducing the chances of attaining the target. Not more than three guns should be worked by a single indicating instrument when closely placed. Each of the heavier guns should have independent indicators for their manipulation. When operated in groups of three, assuming 25 yards as the distance between the axes of the guns and directing the central gun by the reading of the indicator, a dispersion of 25 yards on either side of the directing gun will result, when the line of fire is normal to the battery front; this dispersion will be less if the line of fire is at an angle with the normal to the battery front.

If, by experience, it is found best to endeavor to make an absolute concentration of the fire of the guns worked by a single range-finder indicator, correction factors may be introduced so as to concentrate the firing of each group. This, however, is thought inadvisable by some authorities and that a certain degree of dispersion is desirable. The concentration of fire from a number of groups of guns, each having a natural lane of dispersion of 75 yards width, would afford, it would appear, an ample danger zone, and should satisfy those who advocate the "shot-gun" theory of hitting a flying bird. If, however, an absolute concentration is deemed best, this system admits of its being brought about. The "shot-gun" or chance method of gunnery should not be resorted to, unless it is shown that an approach to accurate fire is unattainable.

It is obvious that no system of submarine mines can be operated by such an indefinite and slow method as provided by the system of squares. The danger radius of torpedoes is so small that it is necessary that the explosion shall take place when the enemy is as nearly as possible over the mine. This applies particularly to the judgment mines and judgment firing.

For the direction of the fire of the guns, a number of range-finders will have to be operated, in order to cover the movements of the various vessels which will constitute the enemy's fleet. The number of range-finders must at least equal the probable number of large vessels of an enemy's fleet.

If the range-finder acting for the guns, can, at the same time, give suitable, constant indications in the operating chamber of the submarine mines, a very clear advantage is gained towards simplification in the management of the defense.

Consideration of the foregoing leads to the conclusion that a suitable range-finding system must be able to accomplish the following:—

1. To give continuous graphical and numerical indications of the range and azimuth angle of a target so that the commandant of the gun or battery may constantly see what is transpiring.
2. To enable automatic fire to be produced by the action of the range-finder, whilst, however, the adjustment for angular displacement of the target, during time of flight, is made at each firing station instead of being made at a central station.
3. That this automatic fire may either be independent, by each gun, or group of guns, or concentric from different batteries of guns.

4. That, whilst the range-finding instruments may be of simple character, as large a number of indicating instruments may be operated therefrom as may be desired, without essential change, and with the minimum of conducting wires and with the minimum battery-power.

5. That the indicating instruments, being required at numerous points in order to give correct readings for accurate and rapid indirect fire, shall be of such nature as to be able to have them made in large numbers and adjustable for any desired position.

6. That these indicating instruments may be connected at will with any one of a number of observing instruments in the event of injury to a station to which it is already connected, or injury to the connecting wires.

7. That corrected readings may be obtained from any indicating instrument which is inoperative (by reason of its wires being cut), from the readings of instruments which are still in operation near it, or from the observing station when communication can be had by signals, telephone or telegraph.

8. That it may serve equally well for operating a system of submarine mines, both for ordinary judgment-firing and for automatically firing "judgment" mines when desired.

9. That, if desired, a simple machine for indicating graphically the enemy's movements on an enlarged scale may be provided for the use of a commandant of a fort, battery or harbor.

10. That the system may be operated, either by a depression range-finder or in combination with a horizontal-base range-finder system.

These conditions can only be fulfilled by an automatic indicating system giving polar coördinates.

## A CHAPTER OF AMERICAN HISTORY.

BY CAPTAIN FREDERICK H. E. EBSTEIN, U.S.A.,

TWENTY-FIRST INFANTRY.

THE international dispute in 1859, that resulted in a joint occupancy—maintained during the thirteen years following—by United States and British troops, of San Juan and other islands in Puget Sound, is an event now almost forgotten, and yet the attendant circumstances of the difficulty form an interesting, and not unimportant page of our national military history. At no time, since the War of 1812, was our Government so nearly on the eve of a war with Great Britain, and a conflict between the two nations was only averted by the conciliatory, moderate and deliberate judgment of Lieutenant-General Scott and Rear Admiral Baynes of the British navy, representing the two governments. Under an agreement made by these distinguished officers, which was subsequently approved by both powers, a joint military occupation of the disputed ground was entered upon pending a future final decision of the ownership.

A group of nineteen islands\* situated in what is known as Washington Sound and lying between the mainland of Washington and Vancouver's Island, in all about 200 square miles, was the tract of country involved in the dispute. San Juan, Orcas and Lopez—the two first named containing each about sixty and the last named about thirty square miles—are the largest of the islands known as the San Juan Archipelago. The island of San Juan lies nearest the British island of Vancouver, and is at once the largest and most important of the group. It is about fifteen miles in length by from three to six miles in width, contains an abundant supply of timber, plenty of springs and has several fine harbors for sea-going vessels.

The treaty with Great Britain, of June 15, 1846, in regard to the Oregon boundary, designates as a line, the 49th parallel to "the middle of the channel which separates the continent from

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\* San Juan, Orcas, Lopez, Blakeley, Decatur, Shaw, Waldron, Henry, Spiedan, Stuart, Sucia and a few islets.

Vancouver's Island and thence southerly through the middle of said channel and Fuca Straits, to the Pacific Ocean." A glance at the map of the State of Washington will show the vagueness and uncertainty of the wording of this important treaty.

There are two channels between the said continent and Vancouver's Island,—the Haro Canal between the last named island and the San Juan group, and Rosario Straits between the San Juan islands and the main land of Washington. Great Britain was not slow to take advantage of the doubtful wording by assuming and maintaining civil jurisdiction of the islands as dependencies of Vancouver's Island, which at that time was a separate British Colony. The Hudson's Bay Company, then a most powerful and influential corporation, had an extensive farm on San Juan which, owing to its mild climate, offered special advantages for sheep raising. The company boldly claimed the exclusive ownership of the island, and under its direction British magistrates exercised civil jurisdiction.

The Government at Washington was early apprehensive of difficulties between our citizens and British subjects, and the President instructed the Governor of Washington Territory that the territorial officers should abstain from all acts within the disputed limits calculated to produce any conflicts, so far as it could be done without implying the concession to the authority of Great Britain of an exclusive right over the premises.

Thus matters stood until June, 1859, when one Lyman A. Cutler, an American resident of San Juan, shot and killed a hog belonging to the local agent of the Hudson's Bay Company, Mr. Griffin, which had destroyed a portion of his garden. Mr. Cutler offered reparation by paying the value of the animal, but the officials of the company demanded one hundred dollars as damages, and in default of payment threatened the offending American with arrest and trial before a British magistrate. Mr. Cutler paid no attention to the threats, but shortly after Mr. Dallas, the company's chief factor, came to San Juan in a British sloop of war to take him (Cutler) to Victoria for trial by British laws.

In this state of affairs Brigadier-General W. S. Harney, then commanding the Military Department of Oregon with headquarters at Fort Vancouver, was appealed to for protection. That officer, with characteristic promptness and without even consulting superior authority, directed Captain (afterwards the Confederate General) George E. Pickett, 9th Infantry, with his company

(D) then at Fort Bellingham, Puget Sound, to proceed at once to take post upon San Juan Island, "to afford adequate protection to the American citizens in their rights as such, and to resist all attempts at interference by the British authorities residing in Vancouver's Island, by intimidation or force in the controversies of the above mentioned parties." General Harney's course did not meet with the unqualified approval of the authorities, but his orders to Captain Pickett were not revoked. Under date of September 3, 1859, the Secretary of War wrote him: "The President was not prepared to learn that you had ordered military possession to be taken of San Juan. \* \* \* He had not anticipated that so decided a step would have been resorted to without instructions."\*

Captain Pickett promptly moved his company of about sixty men to San Juan, and established himself in camp on the south end of the island, in the latter part of July, 1859. He encountered no more formidable opposition than a warning from the Hudson's Bay Company's local agent to vacate the premises. This official's letter and Captain Pickett's reply, are sufficiently interesting to be incorporated here.

BELLEVUE FARM, SAN JUAN, July 30, 1859.

SIR:—I have the honor to inform you that the island of San Juan, on which your camp is pitched, is the property and in the occupation of the Hudson's Bay Company, and to request that you and the whole of the party who have landed from the American vessels, will immediately cease to occupy the same. Should you be unwilling to comply with my request, I feel bound to apply to the civil authorities. Awaiting your reply, I have the honor to be, sir, your obedient servant,

CHAS. JNO. GRIFFIN,  
*Agent Hudson's Bay Company.*

CAPTAIN PICKETT, U. S. Army.

MILITARY CAMP, SAN JUAN, *Washington Territory,*

July 30, 1859.

SIR:—Your communication of this instant has been received. I have to state in reply that I do not acknowledge the right of the Hudson's Bay Company to dictate my course of action. I am here by virtue of an order from my government, and shall remain till recalled by the same authority.

Very respectfully, your obedient servant,

GEORGE E. PICKETT,  
*Captain 9th U. S. Infantry, Commanding.*

MR. CHAS. J. GRIFFIN,  
*Agent Hudson's Bay Company,*  
San Juan Island, W. T.

\* Report of Secretary of War, 1859, page 43.

The sudden and unexpected action of General Harney in taking military possession of the islands, caused great excitement and consternation throughout Vancouver's Island and British Columbia, and loud demands were made by the press and in the Colonial Parliament for prompt and energetic action by the authorities to expel the intruders. Sir James Douglas, Governor and Commander-in-Chief over the colony of Vancouver's Island and its dependencies, issued a proclamation formally and solemnly protesting against the occupation, and declaring that the sovereignty of said islands "by right now is and always hath been in her Majesty, Queen Victoria and her predecessors, Kings of Great Britain."

A civil process served upon Captain Pickett to appear before Mr. De Courcey, a British magistrate, in an action for trespass, having failed to move the American officer from his position, Governor Douglas despatched the British war-ships *Tribune*, 31 guns and 325 men, *Satellite*, 21 guns and 325 men, and *Plumper*, 10 guns and 125 men, together with 200 men of the Royal Engineers and Marines, in all 62 guns and 925 men, under command of Captain G. Phipps Hornby, Royal Navy, to San Juan. Captain Hornby's orders were to land a sufficient force on the island to assert the rights and maintain the dignity of British sovereignty and to protect the rights and property of British subjects. On arrival off San Juan Captain Hornby communicated with Captain Pickett and informed him of his instructions. The latter replied that whether they landed fifty or five thousand men his conduct would not be affected by it; that he would open fire and, if compelled, take to the woods fighting, and so satisfied were the British officers that such would be his course that they hesitated in putting their threat into execution. At the suggestion of Captain Hornby an interview was held at the American camp\* between the three captains of Her Majesty's ships and Captain Pickett. The latter reiterated his position that any attempt on the part of the British to land a force would be met with resistance. He positively declined to accede to Captain Hornby's proposal for a joint occupancy by a British detachment of the same numerical strength as his own, but suggested that both parties remain in their present position until higher authority could be heard from.

\*Captain Hornby proposed that this interview take place on board the *Tribune*, but Captain Pickett declined to have the meeting at any place other than at his camp, to which proposition Captain Hornby acceded.



He also laid particular stress on the fact that the responsibility for any collision that would certainly ensue upon an attempt to land troops would lie with the British commanding officer. The conference closed without any definite result.

As soon as the warlike acts of Governor Douglas came to the ears of General Harney he promptly ordered Lieutenant-Colonel (afterwards General) Silas Casey, 9th Infantry, to reinforce Captain Pickett with all the available troops from Forts Steilacoom and Townsend. These consisted of companies A, C and I, 4th Infantry, numbering 203 men, and they were joined later by companies A, B, D and M, 3d Artillery, numbering 181 men from Fort Vancouver and a detachment of engineers.

Colonel Casey proceeded with his command on the steamer *Julia*. He reached San Juan during a thick fog and succeeded in landing his command under the very guns of the British war-ships and without the knowledge of the British officers. To the fortunate circumstance of the fog the prevention, at this time, of open hostilities, is undoubtedly due. The *Tribune*, with her fires kept up, was lying with her broadside on the landing and her commander had determined to prevent Captain Pickett's reinforcement by other troops. It was with no little chagrin, therefore, that he found upon the fog lifting that the American force had been materially strengthened. Colonel Casey took up a strong position near the south end of the island, on an eminence which commanded the water in three directions and yet sufficiently above it to secure shelter from the fire of the fleet, fortified it and armed it with eight 32-pounder guns taken by him from the steamer *Massachusetts*, an armed vessel belonging to the Quartermaster's Department.

Including Pickett's company and the engineer detachment, Colonel Casey's force numbered 691 officers and men.

About this time Rear Admiral Baynes, Commander-in-Chief of Her Majesty's naval forces, arrived at Esquimault, the British naval station at Victoria, in his flag-ship, the *Ganges*.\* Colonel Casey, appreciating the terrible consequences of a hostile collision between the forces of two friendly governments, sought to avert it by a personal interview with Admiral Baynes. He proceeded to Esquimault—about 25 miles distant—in the U. S. steamer *Shubrick*, and anchored near the British flag-ship. The result of this novel expedient of an American officer, upon his own motion

\*Flag-ship *Ganges*, 84 guns and 840 men.

and without authority from his government, visiting a foreign port in a public vessel, and inviting a British flag-officer to a conference on board the American vessel, is best shown by the subjoined correspondence between these distinguished officers:—

UNITED STATES STEAMER SHUBRICK,  
ESQUIMAULT HARBOR, V. I., August 11, 1859.

Lieutenant-Colonel Casey, United States Army, commanding the forces on San Juan Island, presents his compliments to Admiral Baynes, commanding Her Britannic Majesty's naval forces on the Pacific Coast, and would be happy to meet the Admiral in conference on board the United States steamer *Shubrick*, in this harbor, at his earliest convenience.

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"GANGES,"

ESQUIMAULT, V. I., August 11, 1859.

Rear Admiral Baynes presents his compliments to Lieutenant-Colonel Casey and regrets that circumstances prevent him doing himself the honor of meeting Lieutenant-Colonel Casey on board the *Shubrick*. But Rear Admiral Baynes will have great pleasure in receiving Lieutenant-Colonel Casey, or any one who may wish to accompany him on board the *Ganges*.

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UNITED STATES STEAMER SHUBRICK,  
ESQUIMAULT HARBOR, V. I.

Lieutenant-Colonel Casey regrets that circumstances prevent Rear Admiral Baynes from accepting his invitation to meet him on board the *Shubrick*, according to his request.

Failing in the object of his visit, Colonel Casey returned to his command at San Juan, where the *status quo* was maintained between the opposing forces, the United States troops busily engaged intrenching and strengthening their position and the British war-ships lying in the harbor with broadsides on the camp.

Admiral Baynes, the capable and judicious commander-in-chief, had taken upon himself the responsibility of countermanding Governor Douglas' orders to force a landing, believing it the wiser policy to await further instructions from his home government before rashly precipitating a hostile encounter between the forces of two friendly powers.

In the meantime the authorities at Washington were much alarmed at the threatening attitude of affairs at San Juan, and the President, anxious to avoid a collision, directed Lieutenant-General Winfield Scott, commanding the Army, to proceed at once to the scene of hostilities to assume immediate command, if necessary, of the United States forces in the Pacific Coast. His

instructions were at all hazards to preserve the peace and prevent collision until the question of title could be adjusted by the two governments. There was, however, the probability that hostilities had commenced by an attempt on the part of the British to seize the island before General Scott could arrive there. "In that event," ran the instructions from the Secretary of War, "the President feels from the whole tenor of your past life that you will not suffer the national honor to be tarnished. If we must be forced into a war by the violence of the British authorities, which is not anticipated, we shall abide the issue as best we may without apprehensions as to the result."

Fortunately no collision had occurred when General Scott reached the disputed territory. He had several conferences with Admiral Baynes which ultimately resulted in an agreement,\* afterwards approved by both governments, by which a joint occupancy of the islands should be maintained by the military forces of both powers, until the question of the sovereignty of the disputed territory should be finally adjudicated. Under this agreement neither power was to exercise any exclusive jurisdiction, and all affairs of the islands—civil and military—were to be jointly administered by the two commanding officers. Ample protection and equal rights of person and property were guaranteed to American and British settlers alike. The military forces were limited to one hundred men of each government.

Captain Pickett and his company formed the American garrison which was established at the south end, and a detachment of Royal Marine Infantry under Captain Bazalgette took post on the north end of San Juan Island. Comfortable barracks, quarters and storehouses were erected in both camps. Our post was named Camp Pickett, afterwards changed to Camp Steele (in honor of Gen. Fred. Steele), and later to Camp San Juan Island. It was garrisoned, successively, by companies of the 9th Infantry, 2d Artillery, 23d and 21st Infantry.

The duties of the two commanding officers were manifold and delicate. They were not only military commanders but also judges, notaries, custom officials, land commissioners, registrars and even coroners. There was no other authority on the islands than that of these officers. The population (exclusive of the

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\* This "agreement" was invariably referred to as a "treaty" during the subsequent joint occupancy, but although approved by the administration it was never ratified by the Senate.

garrisons) was about 600, and nearly equally divided in national adherence. All British subjects were required to register their land claims at the English camp, and in like manner American settlers made their registry at our camp. Breaches of the peace, and misdemeanors among citizens were tried before the commander of the power whose protection the offender claimed. If the offense involved citizens of both nations, the two commanders sat in joint court. The punishments were imprisonment in the guard-house, fine or, in aggravated cases, banishment from the islands. The inhabitants paid no taxes of any kind, nor import duties upon any articles brought from the British possessions. They had the choice of taking their produce to either a British or American market without paying duties, on the certificate of the commanding officer that such articles were the products of the islands. Schools were maintained by private subscriptions. To the credit of the various commanding officers on both sides, it may be stated that they performed their difficult and complicated duties with the greatest care and impartiality, and without the slightest official friction, during the thirteen years that this anomalous condition of affairs was maintained. The social and personal relations of the officers and their families were the most amicable, and the enlisted men fraternized as if they all belonged to one and the same service.

The last American garrison on San Juan was Company H, 21st Infantry (O'Beirne's), of which the writer was second lieutenant. The question of the true ownership of the islands had, under the Treaty of Washington of 1871 (section 23), been submitted to the Emperor of Germany for arbitration, and was decided by that monarch to rest with the United States. Upon the announcement of the decision, orders were at once given to withdraw the British troops. A little incident in connection with the evacuation created at the time much unfavorable comment upon the British officers in the newspapers of Oregon and Washington, and is of interest. I had been ordered by my commanding officer (Lieutenant Haughey, 21st Infantry) to proceed to the British camp to receive and receipt for such public property as the British commander desired to transfer, the latter having officially notified the American commander of the contemplated withdrawal of the troops, and of his readiness to transfer the public buildings and other property to the custody of the United States. I was accompanied by a mounted detachment of three enlisted men,

one of whom carried a storm flag on his saddle to be hoisted on the flag-staff when the British ensign should be hauled down. As I rode into the camp, a number of sailors and marines were engaged, under direction of officers, in cutting down the handsome flag-staff which stood in the middle of the parade ground, and it fell with a loud crash amid loud hurrahs. The ostensible reason given for this act was, that the staff was needed for a spar on board of one of the naval vessels,\* and that Captain Cator of the *Scout*, who was the senior officer, had given orders to cut it down for that purpose. A young subaltern, however, with perhaps more candor than judgment put it more correctly when he said to me: "We never could have any other flag float from a staff that had borne the cross of St. George."

On the 25th of November, 1872, the English troops embarked on board the ships that were to carry them to Victoria and thence to England. The British post was formally transferred to me by Captain Stanley, Royal Navy, commanding the *Petrel*. As the last boat load of red-coated marines left the shore, one of my men affixed the Stars and Stripes to a convenient telegraph pole near the wharf, and as the graceful folds of our flag unfurled in the breeze, the hearty cheers of my small detachment, reinforced by a few patriotic American settlers, rang out upon the air and upon the ears of the departing foreigners. And so we came into undisputed possession of the San Juan Islands.

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\* H. M. Ships *Scout* and *Petrel* were lying off the wharf to carry away the troops and baggage.

## MILITARY PENOLOGY.

BY CAPTAIN J. W. POPE, U. S. A.,

ASSISTANT QUARTERMASTER AND COMMANDANT OF THE MILITARY PRISON.

**A**MONG the many sciences which the enormous advance and consequent differentiation of practical knowledge have introduced into our language during the past fifty years, one of the latest is penology, the science of punishment.

That this is a true science in more than name, no one can doubt who may have read the proceedings of any session of the National Prison Association, in which appear the numerous descriptive terms and the array of detailed facts deduced from a vast amount of study.

Arising out of the simple state of the social organism, not distant, when the operation of penal laws was restricted to hanging, beheading and deportation, for serious crimes; the whipping post, the stocks, the jail, for misdemeanors; there has been rapidly evolved one of the most important branches of governmental administration, represented by the various penitentiaries, adult and juvenile reformatories, houses of correction and of refuge for males and females, city and county workhouses and jails, which we see scattered over every civilized community, with their trained corps of directors, superintendents, wardens and subordinate officers. Not only is this development illustrated in the division and multiplication of the places of incarceration, but it is still more clearly evidenced in the altered conception and comprehension of the aim of punishment and the nature of crime, resulting from the more profound investigations of this important subject.

So far has this science progressed that the term penology has become almost a misnomer, so inadequate is it to express its comprehensive scope. The more advanced reformers regard crime as a disease originating in heredity, surroundings and associations; and the criminal as a subject for treatment like unto the lunatic or leper; and that the ingredient of punishment should be eliminated and replaced by the conception of cure, reform or separa-

tion, the only desiderata being the protection of society and the reform of the convict.

This fundamental conception of modern penology seems difficult to grasp by those who have not followed the course of the investigation, the deductions from which are often looked upon as sentimental notions inuring to the benefit of the vicious elements of society, through a tendency to weaken the responsibility for crime. The reverse of this effect would be the consequence of the adoption of the views of the prison reformers in the treatment of criminals; for though the criminal should, as a diseased member of society, be esteemed an object of commiseration rather than of vindictiveness, the protection to which society is entitled requires even more rigorous measures against the contagion and contamination of crime.

Thus the New York Prison Law, the most perfect as well as the most recent of all penal laws, based upon the latest conclusions of advanced penologists, provides for the indeterminate sentence; which consists in an indefinite period of incarceration of the criminal, to be terminated only when he can satisfy a legally constituted board of experts that he will not return to criminal practices. The criminal may, under these conditions, be released upon parole and must remain under police surveillance. The great advantage following upon this treatment of criminals would logically be the abolition of limited periods of confinement for hereditary, professional or habitual criminals,—men as certain to resort to criminal acts as the moth to the candle,—which sentences become as absurd under this view as the confinement of lunatics for a limited period would be. Instead of such sentences, internment for life would be the fate of incorrigible convicts whenever necessary for the protection of the public. Though society is inhibited from placing the brand of Cain upon the murderer, it would still be compelled to recognize a living and contaminating reality, against the propagation of which it becomes a duty to guard future generations whenever cure is found impossible in the existing subject. The necessity for the adoption of such treatment becomes apparent, since statistics prove a steady increase of the percentage of crime to the population in this nation. It may afford some consolation to the Army that, if it be reproached with a prevalence of crime in its ranks, crime in general is seen to be on the increase in the mass of civil society from which its forces are recruited.



Under the general law of social progress, that advances in a given direction by the general public tend to draw the thoughts and studies of special classes in a similar direction, we see that, while the study of penology has made such great progress among civilians, the Army has been devoting no inconsiderable amount of thought to military criminal statistics.

The science of penology may be said to date from the period of twenty years ago (1870), when the National Prison Association was formed in Cincinnati.

Nor did the Army fall far behind the civilian prison reformers, as may be seen in the fact that almost as soon as the movement resultant upon the foundation of that association began, an agitation arose in the Army, based upon the condition of the guard-house on Governor's Island (Castle Williams, as it was called), and others, to which the attention of the authorities was attracted, just as the deplorable state of the corresponding county and city jails were arousing the interest of the public. The ensuing investigations brought about the establishment of the Military Prison in 1875, the law of which was the direct emanation of that reform movement, and was based upon the humane doctrines inculcated by those early reformers.

Whether or not it is going too far to assert that the science of penology in general had its birth during the days of 1870, it is certain that Military Penology had its crude origin in the agitation and discussion preliminary to the enactment of the Military Prison law. Previous to the enactment of that law, none of the conditions prerequisite to the evolution of this science, such as numerous subjects congregated in permanent locations, had come into existence. Just as alienists would not exist without insane asylums,—the science of war could not arise without armies,—nor prison discipline develop into the science of penology through the data afforded by the transitory population of jails governed by as transitory jailors,—so military penology could not be evolved out of the shifting inmates of guard-houses under temporary commanders, while the serious army criminals were so easily disposed of by incarceration in the penitentiaries of the several States. Though a philanthropist like the noble Howard might come forth in any stage of criminal abuse, no such penologist as the great Brockway of the Elmira Reformatory could be developed, until regulated prisons and congregated bodies of prisoners should exist as data for the evolution of a science.

The crime peculiar to the Army, which has chiefly nurtured the study of military penology, as distinct from prison discipline, is desertion. Previous to 1870 deserters were generally sentenced to penitentiaries, though some were confined in post guard-houses. It requires a strong incentive to induce any one to take up so gloomy a subject as penology, and so long as the convenient method was available of devolving upon the States the charge of military convicts, little incentive existed and no opportunity was afforded, to differentiate this branch of the doleful science. It was only when the Army was legally charged with the correction of its military criminals under its own permanent control that the necessity for such study became apparent, and that the requirement has since received due recognition may be seen in the innumerable official statistics and investigations which fill the records since 1870.

That the study of this subject has largely taken the direction of criticism of the military prison is not unnatural, for if the prison, the legally instituted reformatory for the more serious military criminals, is unable to withstand just criticism, it should be either altered or abolished. But in these criticisms several important points have not received sufficient recognition.

First.—There is a failure to give due prominence to the fact that the people as represented in Congress, and not the Army, must decide upon the degree and method of punishment, and that, so far, the decision stands recorded in the law of the prison.

Second.—While the prison is the chief place of confinement of serious military offenders, it is not solely an army institution, but stands rather between the service and the people, seeing that the relation of its inmates to the Army has been totally severed. Though it must be confessed that while this position is ignored in other respects, the resultant inconvenience of being between two fires has not been escaped.

Third.—The object of the punishment is generally misjudged, it being the training of the dishonorably discharged soldier to become a useful *citizen*, not *soldier*—not so much by purely military, as by prison, discipline.

Fourth.—What constitutes punishment is not clearly perceived. This consists in restraint which, as carried out in close supervision, steady work, restricted intercourse, strict discipline, is far more effective than any inhuman but loose treatment, with insufficient food, poor clothes and worse discipline. The disci-

pline that elevates is often more distasteful to the criminal than that which degrades, but the former is the only proper system recognized by prison reformers. The agency of the lash, the shower bath, the shackle, may produce a reign of terror; but a reign of terror breeds more stealthy elements inimical to law than the most humane of governments, because the resultant disorganizing forces attack both rulers and subjects.

To return to the topic, Military Penology, or more properly Criminology, has for its study three separate classes, each of which has its peculiar places of incarceration.

The first class comprise those soldiers who, while within the fold of the military establishment, commit some essentially civil crime such as theft, burglary, forgery, perjury, etc. The members of this class are normally confined in such State penitentiaries as are designated military prisons by the Secretary of War; and come under the various classifications of hereditary, habitual, professional, and occasional criminals. The theory under which the Army is allowed to devolve the charge of this class of its convicts upon the States, is that the individuals composing it enter the ranks as criminals or with criminal tendencies, the Army being held irresponsible for their criminal acts;—that civil society is therefore willing that they shall, when sentenced by court-martial, be received back and be dealt with in the same manner as the similar class of civilians convicted of crime. So long as civil society holds, and by law accepts this view, the military authorities may fairly esteem themselves absolved from further accountability for, and justified in eliminating them from, their penological catalogue. This view is further justifiable by the certainty that military life does not lead to civil crimes, but acts as a restraint upon their perpetration; still it does not appear for the best interest of society, that an instrument, acknowledged by prison experts to be the best adapted for dealing with lawlessness, should turn over any individual upon whom its courts have passed sentence to another jurisdiction, until its high disciplinary powers shall have been exhausted in an endeavor to accomplish reformation. In this regard the present method is ill-advised and the Army should be charged with, and should exert, its best endeavors for the reformation of every one who has entered and committed crime within its jurisdiction, before restoring him to society. In order to manage this class special methods would be requisite, but as this treatise is intended to deal with a condition, and not a the-

ory, it will be well with this suggestion to pass on to the more peculiar subjects of military penology.

The second class comprise those committing offenses against purely military law, such as mutiny, desertion, and others involving dishonorable discharge from the service, for which the places of confinement are the Military Prison, Alcatraz Island and other guard-houses, chiefly the first named.

It is generally thought by civilians as well as officers that a class involving merely military offenders who have been conversant with military discipline should be easy to manage. No greater mistake could be made, for though it is true that these individuals have been under the most rigid of training schools, it is equally true that the training has failed to control them;—that on the contrary they have learned to evade or defy all the discipline the service has imposed, as acknowledged by their discharge therefrom. Though wardens of penitentiaries testify that the military convicts committed to their charge are usually their best behaved class, and their testimony may seem to invalidate the above statement, yet there is no contradiction in fact, because soldiers guilty of civil crimes are an entirely different class. These military convicts sentenced to penitentiaries may equally be, and often are, perfectly well-behaved in the ranks so far as soldierly bearing and performance of duty are concerned, since the service training to obedience, respect for authority, and steady habits, cannot eradicate incurable tendencies to civil crimes such as theft or embezzlement. Their strict schooling will only serve to make them see the advantage of obeying the penitentiary rules, and in this way inculcate good behavior during confinement. These facts do not signify any contradiction to the assertion that the very different class of confirmed military offenders are among the most difficult to govern. In character, the latter element are graduated from the simply worthless up to the most incorrigibly insubordinate of men. It may seem a simple matter to manage a worthless character and if nothing beyond control is designed this may be true, but when the attempt must be made to construct out of such an individual,—destitute of the elements of pride, stability and intelligence—a useful member of society, the problem becomes exceedingly difficult; and when we follow up the gradations through the grumbler, the malcontent, the malingerer, the simulator of insanity, the insubordinate and the violent, all inoculated with untruthfulness, the difficulties grow in dimensions. The problems

of military penology are further complicated by the fact that public sympathy is invariably enlisted on the side of the military offender as a victim of what is esteemed a harsh or over-strict system, which public sentiment is a most powerful support to any one starting out to defy any statute law.

This lenient public sentiment is expressed in the mild and humane law establishing the prison, and while this leniency makes the management of the harder cases more difficult, it cannot be successfully contended that humane regulations, rigidly enforced, do not constitute the best means for the reformation of the larger portion of those for whom it was instituted. Cruelty and barbarous treatment may more readily enforce submission, though such methods are assuredly unsuited to reform for the purposes of society with which alone the public is concerned, and so far the public is right in its conclusions.

The Military Prison was established chiefly for the difficult classes comprising the confirmed drunkard, the vagrant, the well-bred black sheep, the dissatisfied, the dissolute and the violent, who have drifted into the Army and for whose regeneration military discipline has failed; and it was hoped in the earlier period of the existence of the prison that a course of prison discipline would again fit this element for restoration to the service as good soldiers. At that time it was customary for the sentences of general courts-martial to prescribe a term of imprisonment prior to the dishonorable discharge, and in accordance with the intention as above stated the law provided for the restoration by the Secretary of War to the service as good soldiers, as well as to civil life as good citizens, of such as by their good conduct in prison merited these favors.

After the establishment of the prison the practice of dishonorable discharge as the initial point of the sentence, was inaugurated for the purpose of clearing the rolls and of taking out discharged prisoners for the strength of the Army. Early in the working of the institution it was discovered that the restoration to the service was too doubtful as a matter of utility to remain an essential feature of the prison administration, and, in consequence, manufactures and skilled labor were introduced to fit the criminal for civil life, and the intent to restore to the ranks was reduced to a subordinate issue to be carried out only under special restrictions.

As has been indicated, military discipline is highly efficient

in the main for prison governance, though with radical differences. The obedience inculcated by the service is the basis of this as of all discipline, and the life of a soldier with daily training to obedience best accomplishes this end ; but whereas all military discipline is for bodies of men, prison discipline must be individual and separate. With soldiers it is designed to breed *esprit de corps* and love of the organization to which they belong. Prison discipline on the contrary must teach distaste for the institution and must act upon the units separately to build up the individual man to self-reliance and self-support, particularly when the design is limited to a preparation for his restoration to society as an individual member. It must be recognized in this, as in all practical systems, that only a percentage of criminals are capable of being reformed, and that for these all reformatory influences should be instituted.

There will inevitably be found among soldiers, as among civilians, individuals of hereditary taints, or habitual training, or incorrigible bent, who are beyond the power of reformation by any human agency. A large number of crimes have their origin in ignorance or want of education, and therefore every prison should have a school in order that crime so originating may be counteracted by education, even though it is well known that some of the worst criminals are of the highly educated type.

The principle of separation in confinement is a most necessary feature of the best type of prison management, since it prevents the contamination of the better by the hardened class of prisoners. The construction of the Military Prison, unfortunately, does not admit of carrying out this desirable condition. This requirement does not exclude congregate labor where the prisoner is under strict supervision, which method of separation in cells and congregate labor, known as the Auburn system, is advocated by almost all the best prison authorities. Contamination while at congregate work is sufficiently guarded against by the rule of silence, which should be strictly enforced ; and, when so enforced, the Auburn system is superior to all others. Absolute cleanliness in person and surroundings has an elevating influence, and should be rigidly enforced. Regular habits are indispensable adjuncts to all prison reform.

With military prisoners all duties should conform to military rules. Marching to meals and to work should be in military order and step. No disorder or gazing about in ranks should be



permitted. Military formations and the performance of all duties with precision should be exacted with scrupulous care.

In advancing the modern idea that reform or cure should be substituted for punishment, and that therefore the system of imprisonment should be humane, it is not the intention to exclude punishment as a means of enforcing obedience to prison rules. Every institution must have the means of compelling observance of its regulations, and when those rules which are established for the benefit of the inmate are violated and trampled upon, deterrent punishment is indispensable and should be administered with vigor. Every prison should include in its rules rewards for good behavior, such as the shortening of the sentence, and the giving of part of the earnings of his labor to the convict.

Classification is essential in order to divide the well-disposed from the vicious. Punishments should be graded, and every offense however trivial should involve its proper penalty as invariably as the law of nature exacts suffering for non-conformity with its every tenet. The rigid punishment for slight infractions of rules has a sure tendency to obviate graver offenses. However desirable in religion, the prodigal son theory has no place in prison government, for the reason that even though forgiveness of faults might favorably affect the guilty, its influence on others is destructive of discipline. No class of individuals under the sun are more jealous of their rights or privileges than the inmates of a prison, and justice or impartial administration of rules is the clear right of prisoners equally with all other men.

As before explained, the two classes of military convicts above mentioned are entirely composed of soldiers, who have been dishonorably discharged from the service, as not considered of further utility. Their return to the service being only a remote contingency, the Army has but a subsidiary interest in the result of their prison training, and but little control over the method thereof. Still there remains one point in reference to this class in which the authorities are rightly and vitally concerned, and this is, that the criminals which they have discharged, shall not effect an unauthorized re-entrance into the ranks. By dishonorably discharging a soldier, the military authorities have definitely asserted their conclusion that he is entirely unfitted to cumber the ranks with his criminal character, and it is therefore their right and duty to see that the best attainable means be taken to exclude him therefrom. In order to insure this result, it is essential that



means be taken to absolutely identify every recruit, and that the best means to this end be adopted.

Recently the Medical Department has adopted a system which, if successful, would go far to accomplish this end. That its success seems doubtful must be admitted, and that it is not the most certain means is indisputable. By far the best means yet proposed, consists in taking the measurements of all recruits by the Bertillon method and a photographic negative, to be filed in the Adjutant-General's office with each descriptive list and compared with every newly received description.

The single point urged against the Bertillon method of identification, admitted to be the most perfect, is the "ethical" objection alleged to be founded upon the fact that the method has been used for the identification of civil criminals. Yet it is difficult to comprehend what principle of morals can be involved in the relative merits of different systems of describing the individual so that he may be thereby recognized, when neither mode involves the inadmissible features of branding or disfigurement of any kind. The present measures for describing recruits are equally in general use for describing criminals. It is conceivable that sentimentality may find objection to any system which lifts the veil of secrecy from the convict who has fulfilled the penalty of his offense and entered upon an honorable career, but here the objection is not to the special, but to any method. With the soldier a certain method of description has, from time immemorial, been considered necessary and has always been in use. No stretch of sentiment could well find a violation of ethics in perfecting a method already in use, which is all the adoption of the Bertillon method signifies. Nor is it probable that such objection has entered the minds of soldiers, and if such objection to that method does find lodgment in any mind, it is inconceivable that it should not apply with greater force to a method which involves stripping and taking the defects and marks of the bare body, than to an extension of the present method to include measurements of the various bony structures of the body.

As the former is now in use, there would seem to be no sufficient objection to the prompt adoption of the more perfect Bertillon method, nor could there be serious doubt that the latter would accomplish the result beyond peradventure. The simplicity and certainty of this method should be its sufficient recommendation.

Though the rules of all prisons should be humane, the absence of harshness should be accompanied by their rigid enforcement, so that, though the discipline may fall more lightly on the good prisoner, it shall not fail to go hard with the bad.

Among the humane rules, proper to every prison, which the law of the Military Prison prescribes, are wholesome and sufficient food, good, substantial clothing, ample and clean bedding, and bathing facilities sufficing for perfect personal cleanliness. It is a mistake, however, to suppose that because such needed privileges are recognized, a prison will therefore be an easy place for its inmates. The average prisoner most dislikes those requirements, though for his good, which include rigid discipline, constant supervision, steady labor and certain punishment for every fault.

The elements of prison discipline for this class may therefore be summarized as follows: Rigid enforcement of all rules; access to educational advantages; instruction in a variety of trades; steady hard labor; constant supervision; separation in sleeping cells with congregate occupations, coupled with the rule of silence or prohibition of unnecessary talking at labor; wholesome and sufficient food; ample and clean bedding; abundant bathing facilities, joined to the requirement of perfect cleanliness in person and surroundings; to which should always be added full opportunity for moral and religious instruction. Military training should be scrupulously preserved in marching to all duties and in all formations, and in showing deference to superiors at all times.

This is, briefly stated, the system designed to be enforced in the Military Prison in accordance with the law of its establishment.

The third class of subjects of military penology includes those over whom the Army has absolute control, and comprises those offenders against the rules and Articles of War and Army regulations who have been sentenced by court-martial to confinement in post guard-houses.

The individuals composing this class include the periodical drunkard, the absentee, petty shirk, malingerer, grumbler, guard-house lawyer, and those guilty of inattention to duty or of the lesser degrees of insubordination, and of other offenses to the prejudice of good order and military discipline.

A great advance in discipline for this class has been made by means of the law authorizing summary courts, which acts to do away with unnecessary confinement. Still it would be a mistake

to suppose that the necessity for guard-house punishment can ever be wholly abolished. So long as human nature remains unchanged, so long will guard-houses remain necessary evils, and the need of their improvement is as great now as ever before, while the duty of compassing this result falls entirely upon the Army. It is chiefly in order to improve the guard-house discipline that a thorough study of military penology is important to the whole Army. It is essential to a proper study of the subject to recognize that, though the guard-house is for petty offenses, it still remains a prison; and that all prisons, large or small, should be under some stable regulated government. The guard-house in military penology corresponds to the city jail or lock-up, and there seems to pervade, in the conception of the former as well as of the latter, the notion that little care or thought need be given the place or its inmates, that they are of little importance and that almost any kind of place or government, provided they are sufficiently uncomfortable, will answer the purpose.

As civilian reformers are now earnestly endeavoring to prove the erroneousness of such impressions in regard to jails, and to enforce the conviction that, as they are the starting points of criminal punishment, they are therefore the all important points for beginning the reformation of the incipient criminal; so should guard-houses and their management be considered of vital consequence as the initial points for reforming the military misdeedmanant beginning his evil course.

When this is once realized, it is to be hoped that more care will be devoted to the improvement of the guard-house and its discipline. It cannot be too earnestly insisted upon that the petty prison, equally with the larger, should have its rules and regulations, and that these should include the main features of all prison regulations. Without such rules and regulations there is little hope for genuine improvement. The model guard-house, equally with the State prison, should include in rules certain general principles.

First.—There should be a well-defined system of rewards as well as of punishments. At present there is no definite system, even of punishment, each guard-house being governed according to the caprice of its commander, while no system of rewards is provided. It would be best that such rules should be made general by orders from the War Department, but if this is not done, each post should have its own guard-house regulations. Punish-

ment should be administered for every trivial offense, and should vary according to the degree of guilt. It might include admonishment, extra or different kinds of labor, deprivation of one or more meals, solitary confinement, etc., all of which should be entered upon the guard book. The rewards might consist in reduction of sentence for good behavior (which reduction might be forfeited in whole or in part, by misconduct), lighter or more desirable kind of labor, and greater privileges. If the rewards are not regulated by the War Department, it is possible that the sentences of garrison or general courts might be made to include such rewards.

Second.—To secure the uniformity necessary to exact justice the punishments should be ordered by no one but the commanding officer. All offenses, however light, should be reported by officers or non-commissioned officers of the guard, or by sentinels over prisoners. The notice taken of slight offenses, here as elsewhere, often prevents the more serious violation of rules.

Third.—Whenever possible, all confinement should be on the separate principle, though the labor may be congregate. It is of vital moment that the first or occasional offenders should not be herded with the habitual or hardened or worthless class.

No method could be less effective for reforming a young recruit who has committed his first offense involving imprisonment, than that which puts him under the influence of the hardened offender known as the guard-house lawyer. Doubtless the remedy would require differently constructed guard-houses, all of which should be provided with separate cells.

Fourth.—Absolute cleanliness should be rigidly enforced, for which purpose one or more prisoners might be detailed and held responsible for the cleanliness of the guard-house.

These rules are applicable to all prisons, and guard-house discipline should require in addition thereto the most exact performance of all military duties, such as marching in exact order and step, neatness of person and dress so far as labor permits, perfect behavior in the ranks, perfect order and decorum at all times, and strict observance of all Army Regulations, all this under penalty of certain punishment for failure.

In rigidly enforcing such rules, no abuse or ill treatment of prisoners on the part of guards or others in excess of the punishments prescribed by the commanding officer, should be permitted.

The imposition of minor punishments for slight offenses will always be the *sine qua non* of good prison discipline. Few prisoners will require further discipline than will be found in these punishments, provided they are prompt and certain; and though the system would fall more lightly on well behaved prisoners, it would make the guard-house much more distasteful to the average prisoner than severer methods loosely administered.

All prisons will have a proportion of inmates who will defy all rules, no matter how just or perfect, and, to repeat, since every prison must be provided with means of enforcing obedience, so must the guard-house have its method of compelling obedience to its rules. The best known instrument allowable for such extreme cases has been found to be solitary confinement in a cell, on a limited diet, and therefore every guard-house should have one or more dark cells.

It ought not to be inferred that because the system herein advocated is simple it would be therefore less effective, since simplicity is an advantage to any discipline; nor is it intended to do more than suggest the elementary principles upon which to base definite guard-house regulations and to point out the need of their adoption. No one can witness the loose methods in vogue in most guard-houses,—the apparently aimless wandering about of post prisoners,—their lawless behavior and freedom from real restraint,—without being impressed with the want of systematic regulation.

While suggesting a more perfect management of prisoners confined in guard-houses, it is not intended to advocate confinement when other penalties would suffice. It is always best to preserve the self-respect of soldiers so far as possible, and confinement tends to sacrifice their self-respect, and should only be used when necessary for the reformation of the individual and for an example to deter others from like offenses.

It should be remembered, further, that any system is better than none, and that, when once a definite system is established, its defects speedily become apparent and may be remedied;—that the need of definite regulation will grow in proportion as soldiers are collected in large garrisons according to the present policy of the military authorities, and that the requisite facilities will become more available under these conditions, and the possibilities of securing properly built guard-houses become greater. When these circumstances obtain, and when the crude methods

and rude structures now used for guard-houses are replaced by systematic discipline and well adapted buildings, the post guard-house will exert all the deterrent and reformatory influences best adapted to the class of minor offenders inevitably found in the ranks of all armies.

If these remarks should serve to direct attention to what seems a serious defect in our service, the aim of this treatise will be accomplished ; since absolute reliance may be placed upon the capacity of the officers of the Army to work out the details of any needed reform when their interest has been enlisted.

It seems an especially appropriate time to begin a reform in guard-house discipline when the War Department has just adopted a long needed code of penalties to guide courts-martial in passing sentence.

## Comment and Criticism.

(The remarks under this head have, generally, been invited by the Publication Committee, which desires that, as far as practicable, these "Comments" should appear under authors' names.)

### I.

#### "The Gyroscope and Drift."

Lieut. E. T. C. Richmond, 2d Artillery, U. S. A.

"A S the deflecting force of rotary motion is the sole agent in diverting the vertical velocity produced by gravity from its downward direction, and in producing these paradoxical effects; and as the foregoing analysis, while it has determined its value, has thrown no light upon its origin, it may be well to inquire how this force is created."<sup>\*</sup>

The above will be found near the *end* of General Barnard's "Admirable little work on the gyroscope," and is followed by no analytical investigation.

This authority, in whom my critic on p. 336, JOURNAL M. S. I. very properly places entire reliance, here frankly admits that his exhaustive analytical investigations have failed to even suggest the *cause* of the deflecting force as manifested; and doubtless, could Messrs. Poisson, Young, Tait, Thomson, Foucault, Michie, etc., be approached on this subject they too, would be as candid as is General Barnard, and state that while their analytical investigations had developed the direction, intensity and circumstances of action of this deflecting force, its *cause* or *origin* had not been thereby revealed.

The above is a complete answer to all references by my critic, to previous exhaustive *analytical* investigations.

After making the admission as above, that his analysis had failed to find the origin of the deflecting force, General Barnard proceeds to give a popular explanation of the cause of the *horizontal* deflection, and finds it in the deflection of the vertical component motions of particles in the rotating disc, due to the fall of the gyroscope by gravity.

This agrees in every particular with that given in my article.

However, General Barnard stops there; whereas, I have applied the same reasoning to the deflection of the *horizontal* component motions of particles in the disc, due to the horizontal motion of the gyroscope, and have thus arrived at the origin of the *sustaining* force.

If General Barnard's reasoning and conclusions as to the origin of the horizontal deflecting force are correct, so also are mine as to the origin of the sustaining force, since they are identical.

I shall be grateful to any one who will direct me to any page or paragraph where the origin or cause of this sustaining force is plainly stated. I believe analysis has failed to find it.

<sup>\*</sup>General Barnard in *American Journal of Science and Arts*, July, 1857, p. 69.



By the aid of the above quotation and remarks my critic will doubtless be prepared to review my article more understandingly.

He has not risen above the phenomena themselves, which General Barnard had already very thoroughly investigated; whereas, the object of my paper was to investigate the *cause*.

He seems to have misapprehended so many things in my article (even in one case my poorly drawn figures) that it is difficult to frame a reply in detail, therefore it is suggested, as the shortest way out of the difficulty, that he begin at the beginning and try again. He will, however, experience some difficulty so long as his ideas are not clear on the distinctions between centripetal force and the force developed thereby, (called centrifugal), inertia of rest and inertia of motion, moment with respect to an axis and some other things involved in the discussion of this subject.

At the risk of being tedious I will venture a few remarks in reply to points raised.

He says (p. 337, top): "The effect of a force can only be transmitted from the revolving disc through its axis; and since this axis prolonged intersects the vertical axis at O, any force transmitted along it can have no moment with respect to this axis, and hence cannot possibly produce any rotation about it."

These statements are too simple to require further explanation.

This being the chief point in the discussion, and being false in principle, there is but little use in discussing it further.

This indeed, is "modern" mechanics. If such is to become the fashion, it is difficult to imagine how, in the future, we are to open or shut our doors. However, General Barnard uses the principle as I have, in his popular explanation referred to above, and if my paper is to stand or fall upon the soundness of this principle, I certainly have no occasion to lose my sleep.

The two forces at P and P' (Fig. 2, p. 55, JOURNAL M. S. I., January, 1891), undoubtedly form a "couple" and will certainly produce horizontal rotation about the point O, my critic's assertion to the contrary notwithstanding.

"This being the chief point in the discussion, and being" *true* "in principle, there is but little use in discussing it further."

He says, "The curve described is a curve of double curvature," and in the same paragraph, "the curve itself is shown by its differential equation to be a modified cycloid."

Is a cycloid a curve of double curvature?

I presume that General Barnard assumed (as I did) that his readers would understand the curve to be developed upon a vertical plane.

For "Epicycloid" I will substitute "Trochoid" if more satisfactory.

The curve may take many varieties of form under the resistance of the air, friction, varying initial gyrotory impulses, etc., and will not, under all circumstances, be a cycloid. General Barnard gives a case in which it will be a true horizontal circle without undulations. Also cases where the undulations will be *above* the horizontal plane through the initial position; also with loops, all these under initial gyrotory impulses, however.

Again, "'If the rotation of the wheel remain constant the epicycloid will be in a horizontal position and the horizontal motion will be uniform.' This is again untrue."

There should have been no misunderstanding here, as the *average* horizontal motion was meant, as is clearly shown by the context.

It is hardly necessary to remark upon the paragraph in which a reference is made to "perpetual motion," as my critic has misunderstood the plainest language and even the figure.

The "Top" does however, rise and so will the gyroscope under like conditions. "If, with a high initial rotation, the common gyroscope be placed on its point of support with its axis somewhat inclined *above* a horizontal position, it will soon be observed to rise."\*

The last paragraph in my critic's Article, taken in connection with the quotation at the head of this, will probably reveal to him the fact that "temerity" is not an unknown quantity, even in his own composition.

The greater portion, by the way, of this last paragraph would have looked well in quotation marks.

I most heartily agree with my critic on page 338, JOURNAL M. S. I. for March, that analysis is the best and only sure means of arriving at positive results in such subjects as the gyroscope and drift; but in the absence of analytical investigations, such logical reasoning, based upon sound principles, as may lead to results which well agree with observed phenomena certainly may be accepted as legitimate.

General Barnard does not hesitate, as I have no doubt my critic is well aware, to resort to this method after having failed, by analysis, to find the origin of his "Deflecting force."

He says: "The mind can,—indeed it *must*,—search out the inducing causes, bring them together and adjust them to each other, each in its proper relation to the rest."

This aside from analysis.

Referring to my article in the January number of the JOURNAL M. S. I., the reasoning was there transferred from the gyroscope to the projectile, and two observed phenomena accounted for, viz.; drift, and the approximate coincidence of the vertical projection of the axis of the projectile with that of the tangent to the trajectory, at all points within the limits of the trajectory which it is possible to observe in practice.

I have never seen an explanation of this last.

Other results were then predicted.

That it is taught that, in a "free body" it is the instantaneous axis and not that of figure which changes position under impressed rotations is, of course, well known. But is a projectile in motion a free body?

Moving under its force of propulsion, resisted directly in front by the air and subject to the action of gravity, can it be considered such, in the sense in which that term is used in mechanics?

Though not constrained by a fixed point it may be considered as constrained by an elastic cord, which cord is fixed at one end, and thus the motion is constrained in a sense, as is the gyroscope. It is certainly not a free body; and if not, will not its axis of figure follow, and approximately coincide with the instantaneous axis, as does that of the gyroscope?

The Encyclopædia Britannica says it is a body with two degrees of freedom.

Our rotating World is certainly a body with a higher degree of freedom than a projectile.

There being degrees of freedom, a projectile is not a perfectly free body and therefore the problem of the rolling cone, which assumes both a perfectly free body and impulsive forces, does not apply.

The problem of the rolling cone assumes a free body and one impulsive force.

The gyroscope acts under one impulsive force and one incessant force, this latter being constant in both intensity and direction; and is also constrained by a fixed point.

The projectile acts under two impulsive forces and three incessant forces, one of these latter being constant in both intensity and direction, one variable in intensity and one variable in both intensity and direction.

\*General Barnard, *Journal of Science and Arts*.

It is thus seen that the circumstances under which the projectile acts, more nearly resemble those of the gyroscope than the rolling cone.

Again, if it is the instantaneous axis and not the axis of the Earth which changes position, what becomes of the accepted explanation of precession and nutation?

If the Earth is a free body, then this explanation and also our views on many astronomical matters will have to be greatly modified.

The use of the names "inertia" and "centrifugal force" or their equivalents, is certainly legitimate, so long as they are understood to be reactions developed by other forces; in fact, they are necessitated by the principle that action involves equal reaction and the terms  $\sum m \frac{d^2s}{dt^2}$  and  $\frac{M V^2}{\rho}$  will probably never disappear from the appropriate formulas, by whatever names they may be known.

## II.

### "Artillery Difficulties During the Next War."

Lieut. A. D. Schenck, 2d Artillery, U. S. A.

CAPTAIN CHESTER has presented some exceedingly interesting lessons as to the inutility of pitting the dead past against the living present in war. It would have been quite a different matter for Farragut to have sailed up the swift current of the narrow Mississippi before the advent of the steam engine and propeller. With the ships he had, however, he could pass the ancient defenses "without much risk," and this would still have remained a fact, even had the artillerymen been trained to the point of serving their guns with their eyes shut, and had the officers been thoroughly conversant with, and applied, the most modern system of concentration and control of fire.

Are we, then, to be denied the use of the modern torpedo, for instance, as a defense against steam and the propeller, because, forsooth, a "friendly handspike" can so readily explode and destroy this deadly engine of modern warfare?

One of the captain's difficulties is smoke. But it is not the smoke of future battles we have to fear. It is that of past battles, of ancient ideas and traditions, and of conservative ignorance; want of faith in the present, and in its developed instruments of warfare.

When prehistoric man endeavored to improve his bow and arrow to increase its range and power, was he not condemned by old and experienced officers? And when the youthful innovator scoffed at the sages, was he not devoured by bears as a warning to all future generations of his ilk? The sages of to-day keep the woods full of the same breed of bears, and for the same purpose.

The chief difficulty is given as the "false equipment of the batteries." As we really have no batteries yet, it remains to be seen whether this count will hold or not. "False teaching of the officers and training of the men." Very few of the officers and men have ever seen a modern gun, and we have perforce to serve it with our eyes shut, and in imagination. Whether "delicate instruments and flimsy fittings" are part of it, remains to be seen. The engines of the *Teutonic*, for instance, appear to be full of such things, yet of their efficiency there is no doubt, and the great steamer has to battle with the rough storms of old ocean such as have sent many a "simpler" ship to the bottom. A vernier was not in times past necessary to the successful throwing of a rock or shooting of an arrow, but it is necessary with a modern gun, and can and will be used properly and without trouble.

The modern magazine rifle is by no means as simple as the ancient club, but it has displaced the latter, all the same. It is true, perhaps, that its use in war involves no greater death rate than was due to the use of the club, but an army armed with clubs, pitted against another armed with rifles, would stand no more show than did the ancient forts on the banks of the Mississippi against the power of the steam engine.

Concentration of artillery fire has always been taught. Why artillery officers have not practised what they have been taught, ask the sages. It will be a fortunate thing for us if our new defenses are so constructed as to preclude the possibility of either men or subaltern officers seeing the enemy, however great the desire.

The trouble is, not that the captain abdicates in favor of the gunner, but that the sages teach the subaltern for fifteen or twenty years to be nothing but a gunner (or a general commanding armies). Then the officer remains a captain for twenty years more, and can never after convince himself that he should not individually perform all the duties of every captain under his command.

The captain condemns "individualism," yet his very lessons teach, that it was its existence which insured success, the lack of it, failure. Individualism not only underlies, but guides and controls all successful organized effort, whether of armies or of societies. It existed in Alexander's soldier and ended in himself. It existed in the musketeer of Frederic and ended in himself. But in either case, as with Farragut, it required the perception of an Alexander or a Frederic to recognize the nature of the instrument in hand, and their skill to handle it properly in war.

Science is the right hand of the soldier or statesman in the *preparation* for war. That of ballistics, for instance, has but little of value save to give us modern guns. These at hand, the great requisite for the artilleryman in the next war will be a knowledge, not of the *science*, but of the *art* of ballistics. The danger may lie in the fact that it may take too much time to find the man who has faith in the efficiency of modern appliances. Most men, no doubt, as well as Farragut, could tell the difference between the old sailing ship and the modern steamship. But he only comprehended and easily demonstrated the fact that forts designed for defense against the old windjammer were no match for the new steamship.

Most artillerymen can at least see that there is a difference between the modern and the ancient gun. But when it comes to its use in war, the sages insist that if it is incapable of being served in the same simple manner as the old gun,—or rather, ought to have been served, even according to the old book lessons,—then it is of no avail, and he that questions this dictum must beware of the bears.

But when it is proposed to fill a modern defense with steam engines, delicate instruments, but probably not "flimsy fittings," and gimcracks rivalling in number and kind those to be found on any battle ship, though, unlike the ship, the fort is placed upon the solid earth, and can be designed, armed and protected accordingly,—when all these are suggested, then the art of the artilleryman has passed beyond human skill, of course, though to the innovator it might appear quite as practicable to fight the shore battery as the unstable one floating on the water. And he will stoutly maintain the same, the bears to the contrary notwithstanding.

#### Army and Navy Gazette (London) May 16, 1891.

The question of the relationship of ships to coast defenses seems now to be attracting more attention than ever before, and any contribution that throws light upon the much-vexed question is very welcome. We recently gave our readers the opinion of a naval writer in the *Quarterly Review* that it is not, and never has been, the function of ships to attack such defenses, a view which, at least in regard to the future, is shared by Major Clarke, R.E. An American writer, Capt. James Chester, of the 3d United States

Artillery, has just been giving his ideas in the *JOURNAL OF THE MILITARY SERVICE INSTITUTION*, in a particularly "breezy" manner, upon the "artillery difficulties" which are likely to be experienced in shore batteries in the next war. He bases his conclusions upon the operations at Port Royal Harbor, Forts Jackson and St. Philip, Vicksburg, and Mobile Bay, and begins with the remark that these noteworthy examples of actions between ships and forts might have been profitably studied, but have instead been wholly neglected. That may be so in America, perhaps, but certainly in England Captain T. S. Jackson, R.N., and many other writers have drawn valuable lessons from them; while in the current number of the *Marine-Rundschau*, Captain Borkenhagen, of the German navy, illustrates his position; that the power of guns is small against moving objects, by the attack upon Forts Walker and Beauregard. If we understand Captain Chester aright, he considers that action to be a fair example of the comparative immunity that ships may enjoy, while batteries become untenable and are abandoned; and he seems to imply, further, that it would not have mattered to the ships if every shot had weighed a ton and had moved at the rate of 2000 ft., for the holes would merely have been larger and cleaner, nor if there had been Fiske range-finders, or anemometers, or "any of the paraphernalia, we are trying to make ourselves believe are essential to gunnery" ashore. Lord Wolseley has recently taken occasion in the *United Service Magazine* to remark upon the "honest seriousness" of those American writers who speak of the actions of their raw levies as those of "veterans"; and so we may say that the earthworks at Fort Walker were certainly not up to the date, and were imperfectly traversed. "Looking from the direction of the enfilading fire from the north at Fort Walker," we read, "the wonder was that the ammunition of the guns had not been exploded, and that many more of the men who served the guns were not killed. It seemed almost a miracle that explosions did not occur in the passage-way from which the powder and shells were supplied." ("The Navy in the Civil War," II.) Thus the action at Port Royal is no example of the strength or weakness of coast defenses. The Confederates profited by their experience, building thenceforth, as Captain Jackson points out, their earthworks with heavy traverses and bomb-proofs, to which the gunners retired when the fire of ships was too galling, only to return to their guns when there was a lull. But the Confederates learned more. They learned the value of obstructions as defenses of rivers, which General Beauregard seems at first to have overlooked; and they proved the value of them at Forts Jackson and St. Philip, and elsewhere. Captain Chester's descriptions of the other actions on the Mississippi and at Mobile Bay are very interesting. He rightly says, of the affair at Fort Jackson, that the neglect of the naval authorities to send down the fire-rafts left the river in complete darkness, and gave the opportunity to an enterprising enemy. We may remark also that the passage of the Vicksburg batteries was made, save in one instance, under cover of the darkness, and that henceforth the electric light ashore will render such a passage impossible. The true lesson to be drawn from the American Civil War is that ships can, under conditions and at a risk, run past shore batteries where there is no room to obstruct the passage, but in the same spirit that prompted Farragut's well-known order, "Damn the torpedoes! full speed ahead." We may deduce also, from the attack upon Forts Jackson and St. Philip (as from the bombardment of Sveaborg), the value of mortar-boats with high-angle fire as an adjunct to a squadron; and the war has many lessons touching the combined action of fleets and land forces, as we may see in the attack upon Charleston, after the first attack upon Fort Sumter had failed. We pass from these matters to Captain Chester's "artillery difficulties," which are interesting, if his arguments are not conclusive. The experience of operations on American coasts and rivers has impressed him with the idea that "war is a rough business, conducted in a rough way by rough and often awkward men." In

relation to Grant's despatch concerning the steamers intended to run the Vicksburg batteries, he exclaims: "Think of it, ye ironclad advocates! Hay-bales and sand-bags, as protection against the best and heaviest artillery of the day, at pistol-shot ranges!" But then, as he says, at that place "the great artillery bugaboo was found to be a man of straw." His "first difficulty" is, therefore, false equipment, false teaching, and false training. Delicate instruments and flimsy fittings, he says, are out of place. Perhaps we should not be surprised to find an American officer, filled with experience of the Civil War, carrying his dislike of such things to an extreme. What, he asks, would have been the use of range-finders, say at Fort Jackson, or at Vicksburg, or even Mobile Bay; what help would the anemometer have been to them? "Just think of setting a vernier under such circumstances!" All which is true; but it is no reason why instruments of precision should not be of the utmost value elsewhere. "When a cannoneer," says Captain Chester, "can serve his gun efficiently with his eyes tied up, he is trained." The captain, he adds, and not the gunners, should control the fire of the battery, and the training which teaches otherwise is vicious. His "second difficulty" is smoke. In the presence of the introduction of smokeless powder, he considers it needful to dwell upon the value of a smoke-curtain, particularly, of course, for enabling ships to run past batteries in safety. His "third difficulty"—the last and, perhaps, the greatest—is "individualism," the "squirrel-shooting marksman-ship" that the Americans practised in the war. To make sea-coast batteries effective, he tells his American readers, captains must command. "It will not do to delegate the direction of the fire to the gunners, however capable they may be." Individualism, he says—the effort to aim guns instead of batteries—has ruined the reputation of Transatlantic sea-coast artillery. Nay, even, he contends—though thereby he seems to vitiate his argument that ships enjoy a peculiar immunity against forts—that it was the individualism of the Confederate gunners that rendered it possible for Farragut to run the batteries successfully. These are the vigorous views of an officer of the American Artillery, which we have thought it would be interesting to lay before our readers.

### III.

#### "The Theory of Drift of Rifled Projectiles."

Lieut. E. T. C. Richmond, 2d Artillery, U. S. A.

THE questions in the article headed as above call forth the following answers and comments:

"Question I. Why does the drift increase with the velocity of rotation?"

Answer I. Because, of two projectiles fired from the same gun, the one having the greater axial rotation will have also the greater motion of translation, with, of course, the greater direct air resistance. Hence the air moment, with respect to the horizontal axis through the centre of gravity and perpendicular to the plane of the trajectory, will be greater, thus producing greater motion in azimuth and consequently greater drift, as it should.

Of two unlike projectiles fired from guns of different calibres and having different axial rotations, I do not know it to be a fact that the one having the greater rotation will always have the greater drift.

The motion in azimuth of the gyroscope is produced *directly* by centrifugal force in the disc, which force is developed by gravity, which is constant. That of the projectile is produced *directly* by centrifugal force in the projectile, which force is developed

by air resistance, the resultant of which does not pass through the centre of gravity, because of the fall of the projectile from the line of the bore produced, due to gravity. This air resistance varies with the motion of translation and hence does also the motion in azimuth and drift.

"Question 2. Why does the drift increase with the diameter of the projectile?"

Answer 2. Is this a fact? It should, however, other things being equal, since an increased surface is presented to the lateral air resistance.

"Question 3. Why does a cylinder tend to drift to the left when fired from a gun with right-handed twist?"

Answer 3. Because the resultant air resistance passes *below* the centre of gravity. (See table 1, page 61, JOURNAL M. S. I. for January.)

"Question 4. Why does a blunt-pointed projectile, such as was at one time used in small arms, and also in the Parrott gun, drift less than a sharp-pointed projectile?"

Answer 4. Because the lever arm of air resistance is shorter.

I have assumed in these answers that the facts are as stated in the questions. If any of these statements are in error, the answers will evidently be made to conform to the true phenomena by simply changing the direction of the lever arm of air resistance, or the intensity of the air moment.

Since the service projectile drifts to the right and the cylinder to the left, it follows that the ogive head of the service projectile may be truncated at such a point that there will be no drift. In other words, that the air resultant may be made to pass through the centre of gravity. For this to be true at all points of the trajectory, the velocities of translation and rotation, the intensity and direction of air resistance, and other conditions, would all of course, have to remain constant. The nearest approach to no drift, under all practicable conditions, would probably be a varying drift; part of the time to the right, part to the left.

As to the writer's theory of drift, it is admitted that the point of the service projectile is above the tangent, but the front end of the axis of a cylinder would be below, since the air resultant passes below the centre of gravity in this case.

The axis of a projectile does not remain parallel to the line of fire. It should, by the principle of "stability of rotation," but gyrotory effect brings it down approximately coincident with the tangent. (Both in vertical projection.)

This is true only within the limits of the trajectory which it is possible to observe. However, taking the most extreme case, since the axis of the service projectile at all points of the trajectory deviates but slightly from the tangent, the sine of the angle "A" will be very small and the term  $R \cdot v \cdot \sin A$ , will be inappreciable when compared with  $V$ .

If all this is true, then the theory fails.

His reasoning in the case of the cone is defective in that he has overlooked the fact that the lateral air resistance (if appreciable) will act through the centre of figure of the triangle cut from the cone by a vertical plane. Now the centre of figure of this triangle is in *front* of the centre of gravity of the cone, therefore it will be the point and not the base of the cone that will be deflected, and hence the effect should be the reverse of that stated. This, again, is believed to be fatal to the theory.

The same reasoning applies to his "ordinary projectile" and "truncated cone." Here again, the theory fails. The remarks upon the curve of the base-ball are believed to be correct, but the case has no analogy whatever to the drift of rifle projectiles.

The idea (if entertained by any one) that gyroscopic motion *directly* retards the fall of a projectile by gravity, is entirely new to me.



## IV.

## Bullets versus Snow.\*

Major Isaac Arnold, Jr., Ordnance Dept., U. S. A.

RECENTLY my attention has been called to articles in newspapers in regard to Russian experiments upon snow as a suitable substance from which to improvise breastworks in time of need.

Eight or nine years ago, I made some experiments at Indianapolis Arsenal that had for their object the determining the action of express bullets when fired into soft substances. By "express" bullet is meant a hollow pointed projectile filled with beeswax or other substance that will assume the fluid form when fired from a rifle.

The express bullets used were formed by placing service bullets (cal. 45) in a lathe and boring a hole about one-tenth of an inch in diameter along the longer axis, two-thirds the length thereof, after which the cavity so formed was filled with melted beeswax.

I found the penetration in loose snow, using the Springfield rifle with service charges of powder and the service bullet, range thirty feet, was a little less than seven feet. The snow was confined in sections of stovepipe, a piece (sheet) of thin manifold paper being placed between sections as a telltale to show which section contained the bullet. These sections of paper showed upon examination that a cone of snow with a constantly increasing base (until penetration ceased) had been formed on the point of the bullet, and I concluded that the slight penetration was due to this constantly increasing surface of resistance. The force stored up in the service bullet was gradually taken up, for, on recovery, the bullets showed no signs of disfiguration.

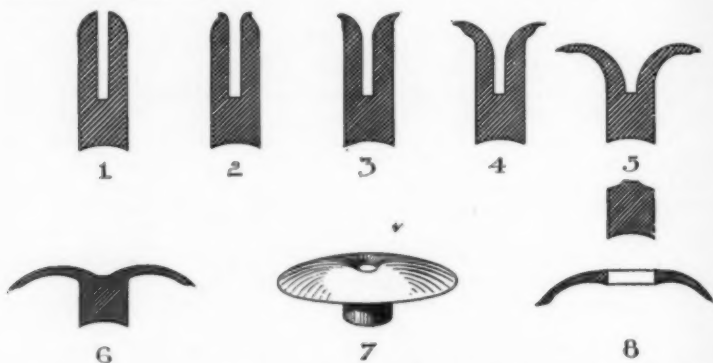
Service bullets altered to express bullets as described and fired with service charges of powder (70 grains), had about the same penetration, but the bullets had undergone a complete change of form. When recovered they resembled mushrooms in appearance. When bullets were fired into snow with charges of five grains of powder there was little penetration. The effect on the bullet was a barely perceptible opening of the cylindrical hole whose axis was coincident with the axis of the bullet, the enlargement being near the point of the bullet. Successive increase of the charges by five grains each, resulted after a while in a complete change of the cylindrical opening into one resembling a cone whose base was at the point of the bullet and apex near the base of same. Increasing the charges by five grains each from this on, the bullets gradually opened out at the point and the expanded metal, rolling outwards and back towards the base, formed a mushroom head. With maximum charges of powder (all the cartridge case would hold) the base of the bullet passed through the head, and was found imbedded in the snow a few inches in advance of the same. It appears that a part of the force stored up in the bullet was expended in changing the form thereof, and undoubtedly the same action takes place when bullets of this kind are fired into the bodies of animals, and accounts for their great destructive effect.

When express bullets are fired with service charges of powder, it is assumed that the beeswax melts and becomes a column of fluid, confined under great pressure. This being the same in all directions, change of form begins along the lines of least resistance, which at first are located near the point, in directions normal to the longer axis of the bullet, and later these lines of resistance become sensibly parallel with the same, thus accounting for the disfiguration or change of form of the bullet.

The sketches numbered from one to eight illustrate graphically the action of these

\* See also Military Note under same title.

bullets under the conditions described, they being ideal sections made by an artist after reading this description.



As the slight penetration of the service bullet with service charges of powder is undoubtedly due to the constantly increasing surface of resistance resulting from the formation of the cone of snow on the point of the bullet, it is believed that loose snow containing a large per cent. of moisture, so that it will pack freely or make good snowballs, would be best suited for use in case of need. A snow fort, properly constructed, would afford complete protection against infantry fire at all ranges if they were armed with our service rifle.

Clean sawdust possesses in a high degree the property of snow to resist penetration of projectiles of small calibre; in fact, the penetration is substantially the same for each. Bullets fired into sawdust will suffer no disfiguration except that due to the presence of foreign substances, such as sand or grit. The sawdust should be well screened and loosely confined or thrown together, not packed tight, so as to allow freedom of movement of the particles to aid the formation of the cone on the point of the bullet. In my experiments the snow was passed through a screen and allowed to fall into a section of pipe, care being taken not to shake the pipe nor pack the snow. When filled, the sections were handled and put together with care to avoid any packing of the contents.

It has occurred to me that butts filled with sawdust might be utilized to receive the bullets at gallery practice, from which they might be recovered and again used without remoulding.

It would be interesting to know the actual penetration of the small calibre steel-coated bullets, with their high velocities. Should the law of penetration hold good with them, could not penetration in sawdust or snow be used as a standard of comparison for the value of all small arms intended for military service?

## Reprints and Translations.\*

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### "THE DEVELOPMENT OF MODERN CAVALRY ACTION IN THE FIELD."

BY MAJOR W. C. JAMES, D.A.A.G., 16th LANCERS.

*(Aldershot Military Society Lecture.)*

THE possibility of great deeds to be performed by the cavalry of the future, when properly handled in large masses, is a subject that has recently attracted and is attracting a good deal of attention in what the newspapers call military circles. "The days of cavalry are not over," is a sentiment almost certain to be duly received with applause when made before an audience of soldiers. Indeed, an infantry officer has thought it necessary to publish under the title of "The Cavalry Revival, a Plea for Infantry,"† a protest against what he considers to be the exorbitant pretensions of the cavalry advocates.

It is generally recognized that the next campaign between France and Germany or between any two of the great powers will commence with a cavalry duel on a very large scale. The attention of the continental powers who make it their constant aim to be as well, and, if possible, a little better prepared for the outbreak of war than their neighbors, has been of late years constantly directed towards the improvement in the arrangements for the mobilization of the cavalry. On both sides of the Rhine there has been a steady increase in the number of regiments quartered close to the frontier with the result that there are large masses of cavalry ready at very short notice to cross the frontier. We may confidently expect that there will be on neither side a disposition to keep cavalry back.

The first duty devolving upon the cavalry at the outset of the campaign will be to cover the mobilization of their own armies and the transport of their troops to the frontier. The Germans themselves admit that in this portion of their duty their cavalry failed in 1870, a failure, however, which mattered little, thanks to the still more glaring want of enterprise or indeed of any definite plan on the part of their opponents. The German cavalry was certainly kept very much to the rear during the first days of the campaign, and in the memoirs of individual regiments we read curious accounts of how the 6th Cavalry Division came up to Saarbrück the day after the

\* Please address communications concerning reprints, translations and reviews to Lieut. J. C. Bush, editor of this department.

† *United Service Magazine*, October, 1890.

battle of the 6th of August, and how the 4th Cavalry Division arrived on the battle-field of Weissemburg too late to do more than listen to the story of the fight as told by the infantry, and spent the day of the battle of Wörth in bivouac ten miles away at Sulz.

We may certainly expect in the next campaign to see much more enterprise on the part of the cavalry from the very commencement of the campaign, and probably attempts will be made on either side to interfere with the mobilization of the enemy's troops. The author of "*La Cavalerie dans la Guerre Moderne*"\* draws a highly colored picture of the power of cavalry acting independently in large masses, whose mobility, he says, will enable them to despise *forts d'arrêt* or advanced battalions, which they will turn if they cannot overthrow them by a *coup de main*. "They," he says, "are immobility, and cavalry is movement." Nothing will arrest its progress but the enemy's cavalry. With these rather inflated views, in which a bombastic phrase takes the place of argument, we may compare the common sense views of Prince Kraft,† briefly, as follows :

Under existing conditions in all European countries, one nation could hardly get more than a day's start in mobilizing, and a surprise would be really impossible. Say the cavalry go 25 or even 30 miles on the first day, they must come upon some obstacle, perhaps a river, or a fortress. If the former, there must be bridges and probably towns, and more or less resistance will be met with. Cavalry must take guns and some wagons for a raid, and these cannot swim rivers. It will be difficult to imagine a case in which the enemy will not be able to assemble at least a battalion to oppose them, and after a fight, even if successful, against 1000 infantry, in what state will the cavalry be for further enterprise? The cavalry will run great risks of severe losses, if not of annihilation, with little chance of success in proportion. When brought to a halt it can do no more than wait for the support of the infantry, and meanwhile send out its feelers. But then it ceases to be a raid at all, and there appears to be no benefit in this premature advance of the cavalry, which will only have had the effect of betraying the intended line of advance to the enemy, or (if the advance is made elsewhere) of taking the cavalry away from where they are most wanted.

Prince Kraft's conclusion is that the cavalry had better wait to be completely mobilized with the rest of the army and then advance in front of, but supported by, and in connection with it.

I venture to suggest that the truth lies between these two opinions. Without claiming for our branch of the service the invincibility asserted by "A. A." I think we must agree that there will probably be opportunities of delaying and injuring the enemy while mobilizing, that cavalry will have a chance of seizing, of course at great risk, but also with a prospect of gaining proportionate advantage.

Be this as it may, there can be no doubt as to the rôle that cavalry will have to play after concentration of the forces and the commencement of operations. This rôle comprises, broadly speaking, the duties of exploration and security.

\* By "A. A."—Paris, 1890.

† "Letters on Cavalry."

The author of "*La Cavalerie dans la Guerre Moderne*" says: "To reconnoitre and protect, to discover and cover, are axioms everywhere accepted. But if the goal is clearly indicated, the means whereby it is to be attained are far from being precisely defined. The general object of strategic reconnaissance resolves itself into the judicious choice of two or three objective points. Cavalry will not, as has often been maintained, have to spread a dense and continuous screen over the whole front of the army. Such dispersion, without insuring penetrating power or strength anywhere, would leave it morally and materially weak, and incapable of effective effort. The cavalry must divide itself into as many groups as there are objective points chosen by the general. Each of these groups must be strongly concentrated. However, the cavalry must not, either, allow the enemy's cavalry to pass through its intervals. These compact masses must be kept in contact with each other by a network of patrols."

On the subject of these duties of cavalry I do not think I can do better than refer briefly to the clear directions given in the German "*Regulations for Field Service*," published in May, 1887, being the outcome of preliminary experimental regulations issued in 1886, tried and reported on during that year, and finally drawn up by a committee. These regulations were issued with an introductory text which it may not be amiss to quote: "The requirements of war form the basis for the instruction of the troops in peace."

The duties of exploration and security are quite distinct, the former being to obtain information, the latter to prevent surprise. (This sounds elementary enough, but the distinction is not always clearly borne in mind by cavalry officers.) Cavalry searching for the enemy may often be obliged to move in unexpected directions, and cannot cover a given front at all times, whereas cavalry covering the march of the columns cannot change direction or go far away without endangering their safety. But the means to be employed in either case are far from being different, as on the one hand "a service of exploration properly carried out forms one of the best means of insuring the security of the main bodies," and on the other the cavalry carrying out the latter duties must organize of itself a system of reconnaissance and exploration, although necessarily in a limited area.

When the cavalry divisions are acting directly in front of the armies, the patrols from the cavalry carrying out the duties of security will merely have to go for information to the former; but as a rule the exploring cavalry will be acting in a direction more or less differing from the main line of advance, seeking to avoid the masses of the enemy, and to gain their flanks. The "Cavalry of Security" must then push forward a fresh *échelon* in front of the main bodies to take up the duties of reconnaissance, whenever the exploring cavalry, by moving to a flank, has left the front uncovered.

It is no longer considered sufficient to form a "screen" in front of the infantry columns; such a screen is of a stationary and delusive character and can be formed by the infantry advanced-guards and outposts. Cavalry must act on the offensive, and take the initiative.

But a few mounted men must be allotted to the infantry forming the advanced-guard or outposts as the case may be, to patrol in their immediate vicinity and act as orderlies, etc.

There will be thus three kinds of cavalry in the German Army:

1. Cavalry charged with the duty of exploration—formed in divisions—under the direct order of the Commander-in-Chief—free to move in any direction.

2. Cavalry charged with the duty of security, comprising nearly all the squadrons of the divisional cavalry, which will only belong to the infantry divisions for administrative purposes, but for the purposes of the operations will be placed under the orders not of the officer commanding the advanced-guard but of the commander of each column or group of columns. This cavalry will also be able to act with great independence.

3. Cavalry charged with the duties in the interior of the columns, the last remnant of the old "Divisional Cavalry," *as few in number as possible*, under the orders of the officers commanding different units in the column.

(Several writers propose that this third kind of cavalry should be composed of reserve or landwehr squadrons.)

The new regulations practically do away with "Divisional Cavalry."

The above are the principles laid down. The methods of execution, *i. e.*, the regulations for patrols and reconnaissances, advanced-guards and outposts, are not laid down precisely, but must depend upon the ground and the circumstances.

It is laid down that officers' patrols should be sparingly used, and an important rule is enunciated which should be a text for every cavalry officer—"All cavalry officers exercising independent commands, including squadron leaders and officers sent on reconnaissance, are responsible for maintaining contact with the enemy, once it has been gained."

The broad principle of initiative and responsibility being laid down, the method of execution is left very much to the discretion of each officer concerned.

The regulations of 1886 laid down that two orderlies should be attached to the staff of each brigade and regiment, and a squadron should be allotted to each division for purposes of communication.

The regulations of 1887 considered this too great weakening of the cavalry, and laid down that the number of cavalry soldiers detached is to be strictly based on the effective strength of the cavalry.

The use of communicating posts is discouraged, messages being better conveyed by well-mounted officers.

In the "Practical Studies" issued by General Verdy du Vernois immediately after the publication of these regulations he assigns cavalry as follows, to each infantry division:

One non-commissioned officer and two men to each general officer commanding a division (none to brigades or regiments).

One non-commissioned officer and eight men for orderlies attached to headquarters for use throughout the column.

One-and-a-half pelotons with the advanced-guard and with the outposts for reconnoitring, patrolling, and orderly duty.

One non-commissioned officer and six men with the baggage.

Total—half a squadron, or with two divisions one squadron.

The French regulations contained in the law of the 19th July, 1887,

modified in February, 1890, provide for the formation out of the 81 regiments that are or will shortly be available in France, excluding 10 regiments in Algeria, 7 independent divisions, each containing 1 brigade of cuirassiers, 1 of dragoons, and 1 of hussars. Out of the 39 remaining regiments 1 will be detailed for each army corps (18), and the remainder will be formed into additional divisions, or possibly into brigades attached to army corps, as has been hitherto the case, but probably the former. The accepted principle in France as well as in Germany is to do away with the old distribution of cavalry, by which a whole regiment was attached to each division, and to concentrate all the cavalry not employed on duties of exploration as far as possible into large bodies charged with the duties of security, forming intermediate groups between the advanced cavalry masses, and the main armies.

From a consideration of these large numbers it is somewhat of a drop to our own comparatively insignificant field army of 1 army corps. The latest edition of our mobilization tables gives 1 squadron to each Infantry Division and 1 squadron to each Army Corps Head-Quarters, or double the number that is considered necessary in Germany.

The large cavalry masses moving in advance of the respective armies will sooner or later come into collision, and a great cavalry duel will take place in which one side or the other will be victorious. The results will have an immense effect upon the campaign, as the army to which the victors belong will be able to choose its points of attack and march towards them, so to speak, in daylight, against an enemy groping in the dark. Success in the cavalry duel will depend upon the efficiency attained by either cavalry with regard to armament, equipment, training and handling of men and horses. The details of cavalry equipment and organization were so ably set forth by Colonel Graves in a lecture to which a good many of us listened with pleasure at the United Service Institution in the spring of this year, that I do not propose to do more than glance at two points, viz., the use of the lance and the use of a fire-arm.

There appears to be a very general consensus of opinion both abroad and in this country in favor of the lance for heavy cavalry at all events. All the German regiments have got it. France has armed 12 cuirassier regiments with it experimentally, and in this country, determined I suppose, not to be altogether behind-hand, the War Office has authorized the issue of lances to the 5th Dragoon Guards. I venture to think that on this point it would be well if our authorities could come to a definite decision soon. The experiment tried in 1885 of arming the 9th Bengal Cavalry with lances just before starting for Suakim would not be a wise one to repeat at the outset of an European campaign. The lance is not a weapon of which the handling can be learnt in a day.

There is an instructive story told in an historical memoir of the Zieten Hussars. In 1741 Frederick the Great raised a lancer regiment in imitation of the Polish Uhlans. The new weapon attracted general attention. The combination of powerful men, good-looking horses, and a smart uniform, caused extraordinary things to be expected of the lancers. To test their military capabilities the king sent them on an expedition against the Aus-



trians, but secretly despatched Zieten with his hussars after them to rectify any mistakes that might be made. The lancers found the enemy and engaged him with great success. They were, however, soon surrounded by superior numbers, and, in the *melée*, the lance, an unaccustomed weapon, was more a hindrance than an assistance to them. It is related that many of the lancers were unhorsed, owing to their dropping the points of their lances too low, so that they stuck in the ground, and swept the holders out of the saddle. Zieten's Hussar's extricated the lancers, who were soon after made into hussars themselves, and Frederick gave up the experiment of lancers for good and all.

I have little doubt that the best combination would be a front-rank armed with lances, and a rear-rank with swords. When the 16th Lancers made the celebrated charge at Aliwal, breaking the Sikh squares, their own losses were enormous, viz., 2 officers, 56 men, and 77 horses killed; 6 officers, 77 men, and 22 horses wounded; 1 man and 73 horses missing; nearly all of whom were killed or wounded by the Sikh swords after they got inside of the square. Had there been a rear-rank without lances and with swords, much of this heavy loss might have been saved.

On the subject of lances, I heard the other day of a curious statement made to a friend of mine by a distinguished Austrian officer, who served in a lancer regiment, and was present at all the principal cavalry charges in the 1866 campaign. He said the great difficulty was to get the men to use the point of the lance. They were so afraid of being unable to extricate the point after a successful thrust that they would always, if not prevented, use the butt-end instead.

The author of the German brochure, "The Armament, Organization, etc., of Cavalry,"\* says, "Now that every nation recognizes the main *raison d'être* of these cavalry masses to be their employment in advance of the army, the result will necessarily follow that the opposing cavalries will come into frequent collision when unable to count upon infantry support. In these encounters that cavalry will be victorious which knows best how to fight both on horseback and on foot." This brings us on to debatable ground. There are a great many cavalry soldiers who maintain that cavalry should never get off their horses or fight with any weapons but the *arme blanche*. This view rests mainly on the fact, which is never disputed, that cavalry is essentially an arm of offense. But it must be remembered that in cases of strategical offensive operations there may, in fact must be, frequent occasions for the employment of defensive tactics. A cavalry division pushes on into the enemy's country and seizes an advanced position, a village, or other important locality, where it must defend itself till the main body comes up. Here is an opportunity for dismounted action, and for this the best fire-arm is necessary.

What does Von Schmidt say? "I want no infantry, my cavalry must help itself, it must know that it has to do so; it must not, directly a few beggarly companies show themselves, rely upon infantry, and the devil take

\* "Über die Bewaffnung, Ausbildung, Organisation, und Verwendung der Reiterei."—Berlin, 1883.

the squadron that allows itself to be hunted out of a village or will not attack it at once. If it cannot do so I must teach it how."

Major Hænig, in the pamphlet just referred to, says that in the later stages of the 1870 war the want of good fire-arms was very much felt. "The cavalry on account of their insufficient armament in a country full of an insurgent population, were only able to carry out their mission in front of the army to a limited extent. Thirty-three out of 55 regiments had no fire-arms at all." And the same writer quotes a phrase as having been often heard: "Had we but a cavalry trained in the use of a fire-arm, what services we could have rendered! As it is we are crippled."

"The great Frederick, who raised the fighting powers of his cavalry to a height never since attained, was very far from objecting to their being trained to fight on foot. (What he did order most peremptorily was that no dragoon should fire from his horse during a charge.) He insisted, on the contrary, upon the whole of his cavalry being able to defend a village, and upon his dragoons being trained to every kind of drill on foot. Nobody ever suggested that these dragoons lost thereby the proper cavalry spirit, seeing that no cavalry was ever more ready to charge, sabre in hand, whenever they could get at the enemy. Without doubt a cavalry armed with a good fire-arm, suitably organized, and animated with a daring spirit, can move more freely under all conditions of a campaign, than a cavalry highly trained for its duties on the battle-field, equally brave and daring with the former, but not armed with a good fire-arm, or understanding its use. It can not only move more freely, but can also act with more independence, it can venture further, and take a more decisive part, it can conquer for itself the power of seeing, it can hold and defend important points, which a cavalry without fire-arms could only do supposing the enemy's cavalry completely driven out of the field, and no hostile population or any resistance at all to be met with."

In January, 1871, the German cavalry, owing to its defective armament, was unable to cover the flank of the army, and it was necessary to add an infantry brigade and two more batteries to it, in fact to make a mixed detachment of all arms.

"The main functions of cavalry are to be carried out in front of the army, and only if every cavalry soldier has confidence in himself that he can in case of necessity make his way in and out of any situation, will be able to move with dash and freedom. The infantry weapon has been enormously improved, and cavalry must be equally well armed. A carbine is no longer enough against the far-ranging infantry fire-arms. Cavalry must have an equally far-ranging and accurate fire-arm."

At the conclusion of the discussion after a lecture on "Range-Finding," at the Royal United Service Institution, on the 7th of February, 1890, Lord Wolseley is reported to have said: "I entirely agree with what a previous speaker (Sir Beauchamp Walker) says as to the proper use of the cavalry soldier, viz., to fight on horseback. It is because I am so fully imbued with this idea as to the province of the cavalry soldier that I am so anxious to see added to every cavalry division a certain number of mounted infantry, who shall go with it, and save the cavalry from having to dismount and

adopt a line of fighting which is not theirs, and which if called upon to do they will generally do badly."

There is one phrase in this expression of Lord Wolseley's opinion to which I think, with all submission to his high authority, a cavalry soldier is justified in expressing dissent. I mean the last sentence, in which the assumption is contained that there is any duty that a mounted man may be legitimately called upon to perform that the cavalry soldier would generally do badly.

The mounted infantry question has now reached a stage of great interest and great importance to the cavalry. The regulations under which this force is organized and trained it is not my province to discuss to-night, although I may perhaps be permitted to describe as a very remarkable and novel experiment in military organization, a system under which a number of infantry soldiers devote two months of the year to the under-study of cavalry parts, while a number of our horses are made to perform the double rôle of cavalry troopers in summer and mounted infantry vehicles in winter.

But when we take up the mobilization tables prepared for a possible expedition abroad and find that the cavalry division is to consist of five regiments of heavy cavalry and one regiment of lancers, and that, while not a single hussar regiment is to take part in it, the mounted infantry finds a place, and practically a permanent place, in the strength of the division, will not silent acquiescence on our part in such a scheme be interpreted as tacit approval of what is virtually the supersession of a portion of our cavalry by the mounted infantry regiment? May we not fairly ask whether the relative skill with the rifle of the mounted infantry is so much greater than that of our hussars and dragoons as to compensate for the necessary inferiority of the former to the latter in all the other duties of a mounted corps? Is this the conclusion that can fairly be drawn from the test of the musketry returns?

Still, whatever our private views on the subject may be, I can answer for every cavalry soldier that, if the authorities, in their wisdom, call upon us to coöperate with mounted infantry in the field, our coöperation will be none the less hearty than if we agreed with every word that has been said on their behalf. With a view to such coöperation being some day required, it is a matter of satisfaction that the rôle to be played by mounted infantry in conjunction with cavalry was determined with some accuracy at the Berkshire manœuvres.

So long as they accept the position assigned to them when with the 1st cavalry brigade at Uffington, viz., of working with, supporting and supported by the cavalry, attempting no detached duties, but merely moving quickly from position to position, we cavalry soldiers will gladly welcome their coöperation.

But I trust that we may see expunged from the drill book any such paragraphs as the following: "Mounted infantry will in future probably form a part of every force in the field; it should move with the vanguard, and may in exceptional cases be employed in detached scouting and patrol duties, thereby allowing the cavalry to be reserved for combined action with the

other arms."\* I trust also that we may not hear again such phrases as were used by my friend Colonel Hutton in a lecture in 1886: "In a rough and difficult country the mounted infantry soldier is more at home on outpost duty than his heavily armed and accoutred comrade of cavalry."

The cavalry soldier, forsooth, being only at home on outpost duty when the country is easy! If indeed there be any magic in the peculiar dress and equipment of the mounted infantry soldier that adds to his efficiency in his double capacity of a horse and foot soldier, then for heaven's sake let us away with our cumbersome accoutrements and equipments, and let us adopt the cord breeches or the putties or whatever it is wherein the magic lies. But if cavalry and mounted infantry are to exist side by side and work harmoniously together, and I trust they will, any such pretensions as to the ability of the latter to do the work of the former will, I hope, be heard of no more.

In Frederick the Great's time cavalry was organized in large regiments, of which the composition was as follows: A regiment of dragoons, consisting of 5 squadrons, was composed as follows: 1 colonel, 1 lieutenant-colonel, 1 major, 2 adjutants, 1 quartermaster, 1 chaplain, 1 solicitor, 1 surgeon, 5 mates, 1 riding master, 1 kettledrummer, 4 hautboys, 1 saddler, 5 farriers, 1 provost, 4 captains, 20 lieutenants and 5 cornets, with 12 non-commissioned officers, 3 drummers, 132 dragoons, and 12 supernumeraries per squadron—total, 851. A regiment of hussars consisted of 10 squadrons with 102 privates per squadron—total, 1172.

In battle a varying number of regiments were collected together and commanded by the senior general, but there was no organization in brigades or divisions. It was not till Napoleon's time that anything like the modern system of organization in divisions was introduced, and under him these divisions were sometimes grouped into corps. In 1805 as many as 128 squadrons were collected together, and in 1812 200 squadrons were formed in 4 corps of 2 or 3 divisions each.

At the present day the cavalry division is universally recognized as the largest cavalry unit to be employed. With regard to its constitution opinions differ considerably. On the continent the normal composition of a division is of 3 brigades, each of 2 regiments. Major Hœnig, the well-known German writer, suggests in a recent work† that this has been laid down in consequence of a cavalry division composed of 2 brigades of 3 regiments having been indifferently handled in 1873, whereas a division of groups of 3 brigades of 2 regiments was ably manœuvred in 1874. In striking contrast to these regiments each composed of 5 or 10 squadrons, under Frederick the Great, V. du Verneuil says in support of the 2 regiment brigades that 2 regiments, each of 4 squadrons, are the maximum which can be efficiently handled by the direct personal influence of one man. In the Franco-German war some of the French divisions had 3, some 2 brigades, all of 2 regiments, and the German divisions were constituted in a variety of different ways, *e. g.*, 2 brigades each of 3 regiments, 2 brigades each of 2 regiments, 3 brigades of 2, 3 brigades of 3 regiments, 2 brigades, one of 3 and 1 of 5 regiments.

\*This was a concession introduced in this year's edition.

† "Tactical Guides for the Employment of the Cavalry Division" (vide United Service Magazine, December, 1890).

According to our latest mobilization tables, our cavalry division is to consist of 2 brigades each of 3 regiments and 2 companies mounted infantry, besides machine guns and other adjuncts.

With all due deference to V. du Vernois' authority, I venture to think our authorized distribution is the best. With a brigade of 3 regiments any part of, or the whole, of one regiment may be detached and still leave a respectable force in the hands of the brigadier for attack. Of course if the 3 line formation in 3 equal bodies is to retain its place as the normal fighting formation a 3 brigade division is most suitable for that formation. On the other hand, for the new formation adopted in Germany, to which I shall refer directly, the division into 2 brigades—1 in first line and 1 in second and third lines—furnishes the required formation most conveniently.

In their latest cavalry regulations the Germans, as usual, are very careful to avoid laying down any definite normal formation, but the main principles adopted by them are as follows: The cavalry division, fighting as a unit, is formed in 3 lines of unequal strength. The first line is to be as strong as possible—to consist usually of half the total number of squadrons. The second line has merely to insure the success of the first line and prevent its being repulsed. There is no longer any idea of rallying the first line in case of defeat. It comprises two-thirds of the remainder with its squadrons disposed principally in rear of one or both flanks of the first line, and the rest at wide intervals behind the first line. The third line (one-sixth of the division) remains as reserve, at the order of the commander of the division, who must not hesitate to fling it into the battle if its intervention can be decisive. The distance from the first to the second line is laid down as about 240 metres (260 yards) and from the first to the third 360 metres (400 yards). These formations have been severely criticised by Colonel Cherfilez, Professor at the *Ecole Supérieure de Guerre*, as follows:

\* "To sum up, no manœuvre, no idea, no inspiration of the moment, no formation to be determined by the ground and the circumstances. All at once a very long line of attack, prematurely deployed in line of columns; nearly all the chances of a battle risked at one stake on the success of the first line, something uncompromising and brutal, without flexibility, disjointed, and almost without reserve."

Colonel Cherfilez proceeds to argue that a very long line will be very difficult to handle, will be unable to alter the direction in which it has been launched, and will be liable to be surprised if that direction is not the right one. Further, if the opposing forces are equal, the idea of enveloping the enemy's flank by extending the front of the first line is erroneous. "Draw on paper," he says, "two opposing formations, each of three regiments. The former with three regiments in line—the latter with three regiments in échelon. How is the former to envelop the latter? Will not the flanks of the former be attacked in their turn, and at a disadvantage, by the flanks of the latter? Where the flanks are equal, when two opposing forces endeavor each to take the other in flank, it is the one that makes the last move that envelops the other. The whole power of échelons lies in this elemen-

\* "Revue de la Cavalerie."—May, 1890.

tary truth, and the whole power of cavalry lies in the strength of its échelons."

The following extract from the regulations issued by Frederick the Great for his cavalry is, I think, interesting:

\* "Orders relating to action:

"1. The army in an engagement must be always drawn up in two lines, and when the first advances against the enemy the second is to remain at such a distance as to be out of danger from the fire.

"2. The second line must be drawn up opposite the intervals of the first that, in case any squadron in it should be repulsed, the squadron nearest may move briskly up to its support and, by dint of fresh vigor and intrepidity, drive back the enemy; moreover when the first line has suffered much the second must be ordered up with all expedition to reinstate it.

"3. All officers in the cavalry must assure themselves that there are only two methods of defeating an enemy—the first of which is by attacking them with the utmost force and impetuosity, and the second by outflanking them.

"4. The manner of charging the enemy is to be the same as directed in the evolution in the preceding part of the regulations, viz., to advance first on a brisk trot and then to fall into a full gallop, taking care at the same time to keep their rank and file well closed. If the squadrons, when they make a charge, will strictly comply with their instructions, the king himself will be answerable for it that the enemy must always give ground."

After all, whatever views we may hold as to the ideal formation of a cavalry division, I do not think we are ever likely to see our ideal realized on the field of battle. Is it probable that two opposing cavalry divisions will meet under such circumstances as to enable the leaders on either side to form up in what used to be known at Aldershot a few years back as "Battle-order," and proceed deliberately to carry out the attack according to the picture? It is scarcely more likely that such a course will be possible than that a cavalry commander will be able to carry out the sagacious directions of De Brack,<sup>†</sup> who says, in reply to the question, "Should cavalry threaten a charge what is to be done?" "You must endeavor quickly to take up a position in front of which may be some obstacles which the enemy does not see; you allow him to charge, and when he reaches these obstacles, which will surprise him and throw him into disorder, you charge him in your turn and profit by his disappointment and physical embarrassment to overthrow him on ground which is unfavorable to him."<sup>‡</sup>

Major Hœnig, in his last pamphlet, says of the greatest cavalry action in the 1870 war: "The cavalry combat of the 22 German squadrons at Ville-sur-Yron stands in tactical respects on the same footing as that which determined the battles of Marston Moor and Zorndorf. It was a huge *mêlée*. Every squadron which happened to be in the neighborhood rushed blindly into the fray. Of lines we saw little at Ville-sur-Yron."

An officer who recently attended the German corps manœuvres described

\* "Regulations for the Prussian Cavalry, translated, 1757, by W. Fawcett, i., Chap. xix.

† "Light Cavalry."—Translated by Colonel L. Hale.

‡ "Tactical Guides," etc.



the cavalry engagements that he saw, in which as many as 76 squadrons took part, as possessing much the same character. It was a case of squadron after squadron cutting in after the first line had attacked, and outflanking or being outflanked by one of the enemy's squadrons. Another officer who was present at the manœuvres of the German cavalry of the guard says with reference to the regulations that prescribe two or three squadrons from the second line to follow in rear of the first line: "I only saw these squadrons used once, and then there were only two of them. I asked why they were not more used, and was told it was owing to forgetfulness."

The fact is that with cavalry on the battle-field, even the mimic battle-field, where its movements are necessarily affected by many considerations, such as the nature of the ground, the necessity of taking cover, etc., it is almost impossible to adhere to definite and precise formations. The moment for the attack presents itself and it must be taken, whether the lines are found just what we want them or not. Broad principles must, of course, be adhered to, and it is necessary to lay down certain formations for practice at peace manœuvres, etc., but even there it is not easy to adhere to them exactly. Even on such a point as the distance to be maintained between the lines there is often a wide difference of opinion. I have a very distinct recollection on the occasion of a rencontre between the two brigades at the Berkshire manœuvres of being told by one general officer holding a responsible position in the army that our reserve was too far off to be of any use, and within two minutes, by another equally distinguished general, that it was so much too close that it must have been irretrievably involved in the defeat of the first line.

I said just now that some formation must be laid down for our guidance in peace. Before suggesting any formation let me say what I think is faulty about our present formation.

The regulations prescribe three lines, each of the same strength, viz., a regiment if the whole force consists of a brigade, and a brigade if it is a division. The second line is to be "usually on the flank which is most threatened, and the third line on the presumably protected flank." Now I venture to think, with all due respect to the authors of the Drill Book (which was, of course, copied in its main features from the German drill of 1876) that it is no such easy matter to determine the flank which is most threatened or the presumably protected flank, except perhaps in an advance across the Long Valley with one flank resting on the canal. If a cavalry force, division, or brigade has to advance against an enemy at a distance of one, two, or three miles, as must often be the case in future campaigns, who is to determine which is the "presumably protected flank"? The enemy, "presumably," will be manœuvring as well as ourselves, and we are just as likely to have to meet an attack on one flank as on the other.

The Germans have at last, after a good many years, emancipated themselves from the trammels of the system of three equal lines which V. Schmidt forced upon them. "Succor squadrons," which for several years were looked upon as a vital point of cavalry drill both in Germany and in this country, have happily been erased from both our drill books. Why should we not strike out a line of our own for once, and boldly return to



something approaching the two lines of Frederick the Great? Cavalry never had, if I may use the term, such a good time as it had under Frederick. Have we really improved upon his methods? I fancy not. What I would suggest as our normal formation will be what the drill book calls or used to call an advance in double échelon from the centre. In the case of a brigade of three regiments, or a division of three brigades, one regiment or one brigade respectively in first line, with one regiment or one brigade écheloned in rear on either flank. If the division consists of two brigades of three regiments the first line might consist of one brigade, and the other brigade might have one regiment in échelon on either flank, and one regiment in rear of the first line, where it would be under the immediate orders of the commander of the whole. The officers commanding regiments or brigades in second line to be authorized to act on their own responsibility as may seem desirable, either moving up into the first line or operating on the enemy's flank, and being further held responsible for detaching from the bodies in échelon further échelons of one or more squadrons to the rear, when a flank is threatened. Great latitude should be allowed to the commanders of regiments or brigades in second line as to the interval and distance to be preserved from the first line. For purely drill purposes I would suggest 300 yards distance, 100 yards interval.

All that the divisional or brigade commander can do is to bring up his division or brigade in good order, to keep it well in hand until the moment for the decisive stroke arrives (taking especial care to prevent his commanding officers embarking in private enterprises which will deprive him of their coöperation at the decisive moment), to select the right time and the right objective for attack, give his commanding officers plain instructions and the right direction, and then leave the issue in their hands. The simpler the initial formations the more likely will be a successful result. I cannot believe that the combat of a cavalry division could ever be conducted like the one of which Verdy du Vernois gives so graphic a picture in his "Studies in Troop-leading." The fight he describes lasts only a few minutes, but during this time the general commanding the division is represented as giving orders to one brigade, galloping to another, sending orders to the third, and, in a word, exercising personal supervision over the details of the fight, which with all respect for the great authority of the writer appears to me impossible from considerations of time and space alone.

We come now to a much debated question—the action of cavalry against infantry.

The introduction of the breech-loader was at one time supposed by a large number of military writers to have put an end to the action of cavalry on the battle-field. Cavalry soldiers looked back upon the palmy days when dragoons and hussars ruled supreme in action, and confessed regretfully that no cavalry could hope to live in the face of the rapid and destructive fire of the breech-loader. The author of "*La Cavalerie dans la Guerre Moderne*" says: "After 1870 an erroneous idea, only to be dissipated by slow degrees, impelled the whole of our cavalry to devote their entire energies to field service (*i. e.*, scouting and reconnoitring) omitting the most important duty of all, the battle." Against this view a very strong reaction

has set in, and for the past ten years there has been gradually growing up a conviction that the future of cavalry will be as great, if not greater, than the past.

Let me briefly refer to one or two of the battles in which cavalry has played a decisive part.

At Hohenfriedberg, in 1745, the Austrian infantry was being pressed back rather in disorder, when (to quote Carlyle's graphic description),\* "Lieut.-General Gessler, under whom is the dragoon regiment Baireuth (10 squadrons), standing in the rear line, noticing the jumbly condition of these Austrian battalions, heaped now one upon another in this part, motions to the Prussian infantry to make what further room is needful, then dashes through in two columns, sabre in hand, with extraordinary impetus and fire into the belly of these jumbly Austrians and dashes them to rags, 20 battalions of them, in an altogether unexampled manner, takes several thousand prisoners, and such a haul of standards, kettledrums, and insignia of honor, as was never got before at one charge, 67 standards, by the tale, for the regiment (by most All Gracious permission) wears ever after 67 upon its cart-ridge-box, and is allowed to beat the Grenadier march."

At Rossbach, in 1757, Seydlitz, with 38 squadrons (4000 horse), first charged and routed the Austrian cavalry (7000 strong), taking them fairly in flank, then reformed, and when the Prussian artillery and infantry had done its work, charged again, this time on the infantry, and converted the defeat into an absolute ruin. The Prussian force was only one to three, about 22,000 to 60,000. Their loss—165 killed, 376 wounded, against 3000 killed and wounded and 5000 prisoners. "Half the Prussians never came into the fire, Seydlitz and seven battalions doing all the fighting that was needed."

At Zorndorf the Russian army, under Fermor, was drawn up in a large square, and the Prussian infantry attacked the south-west corner in two divisions, of which the first, under Manteuffel, went rather too fast, the second rather too slow, thus leaving a gap. "Fermor notices the gap, the wavering of Manteuffel unsupported, plunges out in immense torrent, horse and foot, into the gap, into Manteuffel's flank and front, hurls Manteuffel back, who has no support at hand. 'Victory,' shout the Russians, plunging wildly forward, sweeping all before them, capturing 26 pieces of cannon. What a moment for Frederick; looking on it from some knoll near Zorndorf, I suppose, hastily bidding Seydlitz strike in—'Seydlitz, now.' The hurrahing Russians cannot keep rank at that rate of going, like a buffalo stampede, but fall into heaps and gaps; Seydlitz, with a swiftness, with a dexterity beyond praise, has picked his way across that quaggy Zebern Hollow, falls with say 5000 horse on the flank of this big buffalo stampede, tumbles it into instant ruin, which proves irretrievable as the Prussian infantry come on again and back Seydlitz. In 15 minutes, the Russian Minotaur, this end of it, on to the Gallows Ground, is one wild mass. Seldom was there seen such a charge, issuing in such deluges of wreck, of chaotic flight or chaotic refusal to fly. The Seydlitz cavalry went sabring till, for very fatigue, they gave it up and could do no more." Later in the day, how-

\*History of Frederick the Great.

ever, on the Prussian right, some of Frederick's battalions were broken by the Russian cavalry, when just in the nick of time, "Seydlitz, with his 61 squadrons, arriving from some distance, breaks in, swift as the storm wind, upon the Russian Horse torrent, and drives it before him like a torrent of chaff, so that it did not return again."

It is interesting to observe how completely the succession of the splendid Prussian cavalry, which had triumphed over Austrians, Russians, and French alike, were in their turn virtually exterminated by the cavalry of the first French empire.

The following is the account of one of the most brilliant charges of the magnificent cavalry of which Murat, Kellerman, Nausouty and others were the leaders.

At the battle of Hanau, in 1813, which was brought on by the attempt of V. Wrede, with an army of 60,000 Austrians and Bavarians, to intercept the French army in its retreat after Leipsic, Nausouty commanded the cavalry of the Imperial Guard, which had numbered 5000 at Leipsic.

\*A Russian writer describes the action as follows: "The French cavalry was formed in three lines. The first line, four cuirassier regiments, St. German's division, moved rapidly forward, and overthrew an Austrian regiment of cuirassiers, one of dragoons, and two of Bavarian light horse. General Nausouty then, mindful of the manœuvres with which Kellerman had been so successful at Marengo, turned to the left with his cavalry, and dashed at the infantry. "Some regiments of the allied cavalry came up to the assistance of the infantry, and checked the French charge for an instant, but the mounted grenadiers, the dragoons, and other regiments of the guard came up in support of their first line. In spite of the heroic resistance of the Bavarian foot and horse the French cavalry overthrew everything, broke squares, and flung whole battalions into the river Kinzig."

Lastly, I would very briefly refer to the French cavalry at Borodino, who actually took by assault a redoubt.

The advocates retained in the cause of the infantry will probably say that these successful charges were only possible against troops armed with an inferior weapon. But let me point out that it would be a great mistake to suppose that cavalry really had at any time (after the introduction of fire-arms) obtained an absolute superiority over infantry. As a contrast to the above glorious pages in the history of cavalry, let us take two or three instances of the failure of cavalry in presence of infantry.

At Minden six English battalions, the 12th, 20th, 23d, 25th, 37th, and 51st advanced, rather before they were intended to do so, to the attack of the French centre, consisting of 10,000 cavalry. The British battalions were exposed to a cross-fire from 30 guns on one flank, 36 on the other, "but they seem to heed it little, walk right forward, and to the astonishment of those French horse and of all the world, entirely break and ruin the charge made on them, and tramp forward in chase of the same. The 10,000 horse feel insulted, and rush out again, furiously charging; the English halt and steady themselves; "No fire till they are within 40 paces," and

\*"Revue de la Cavalerie."—April, 1890.

then sent pouring torrents of it as no horse or man can endure. Rally after rally there is on the part of those 10,000, mass after mass of them indignantly plunge on; again, ever again, about six charges in all, but do not break the English lines; one of them does once get through, across the first line, but is thrown back in disgraceful circumstances by the second. After which they gave it up as a thing that cannot be done, and rush rearward, hither, thither, the whole 75 squadrons of them, and between their two wings of infantry are seen boiling in complete disorder.

At the battle of Aspern 5000 French cuirassiers charged three times upon the unbroken Austrian infantry, but not a battalion was broken, and 3000 cuirassiers were left on the field.

There is a curious episode of the battle of Oudenarde worth recording as showing the weakness, under certain conditions, of cavalry.\* "The French being in full retreat, Marlborough ordered 40 squadrons in pursuit, but they were soon checked by the French grenadiers, there being but one road secured with hedges and ditches, lined with the enemy's grenadiers, but no place for the confederate cavalry to form in."

It is only necessary very briefly to refer to the repeated attacks of the French cavalry upon the English squares at Waterloo, showing how even the old Brown Bess was sufficient, properly handled by steady troops, to defy the most determined attacks of these splendid regiments.

The fact is that the conditions of success for cavalry against infantry have not altered since the introduction of the breech-loader.

These conditions are the following:

1. The cavalry must be highly trained, and men and horses in thorough condition.
2. The leaders must be well up to their work, and able to seize the exact moment for their attack.
3. The infantry must have had their resisting power weakened either by surprise, by losses, disaster, or some other cause.

When these conditions are fulfilled we may look forward to seeing cavalry charges against infantry as successful as the celebrated charge of the Austrian cavalry under General Pulz at Custozza. In this battle the leading brigade of Prince Humbert's Division was charged by two Austrian regiments, and compelled to form squares, after which two Italian infantry divisions (36 battalions) were held in check during the whole day by 15 squadrons. The infantry, it is true, was not armed with a breech-loader, but it had a very superior weapon to the fire-arm that enabled the six battalions at Minden to laugh at the 10,000 horse.

With regard to the first point, the characteristic of modern battle-fields is the depth of the zone of fire, which necessitates cavalry being posted on the flanks, unless they are to be kept at so great a distance from the fighting line as to be practically useless. Very different from the days when it was possible, as at Minden, for an army (the French) to be drawn up with the infantry on the wings, and the cavalry in the centre; or as at Blenheim for an army to advance to the attack in a number of parallel columns, composed of infantry and cavalry alternately.

\* "Field of Mars."

Cavalry will in future battles have very long distances to move, as they must move round the flanks to avoid masking their own fire; and to be able to do this very great calls will be made upon the endurance of men and horses. Prince Kraft says that cavalry must be able to move four miles at a rapid pace (trot and gallop) and then charge. This he says can be done by systematic training. He mentions that at his inspections he used to make each squadron gallop for from six to ten or eleven minutes, and then execute the attack. I leave it to more competent critics than myself to say whether our cavalry is trained up to as high a standard as this. The training of the men is of equal importance to that of the horses, if they are not to arrive blown and exhausted.

The great obstacle to long and rapid movements on the part of cavalry is undoubtedly the weight that has to be carried on the horses. I venture to think that the greatest stride in the direction of cavalry progress will have been taken when we shall have made up our minds to put nearly everything now carried on the horse into light squadron carts, not, I need scarcely say, of the present regulation pattern, which combines a maximum of weight with a minimum of capacity, but light 4-wheeled wagons of the kind that was experimented upon in Belgium in 1888. I never could understand why each soldier should not have a pair of saddle-bags, in ordinary peace marches, and when absolutely necessary, to be carried on the horse, which can be done, as I know from experience, with absolute comfort to the rider, and at other times to go in the wagons, which would seldom be far behind. If they do not come up then the soldier must make the best of it with what he can carry in his wallets, with the cloak strapped across it. This would enable the saddles to be made lighter and do away with all the rear pack, thereby diminishing sore backs considerably.

No great leaders came to the front in 1870. Major Hœnig says plainly enough that none of the German division leaders were up to their work. He refers to the fact that the 6th cavalry division had to be sent for at Rezonville, as a great reproach to the commander, and points out a splendid opportunity missed on the 6th January in the west of France, where 27 German squadrons might have annihilated a French division and captured all its artillery. "Only the Seydlitz was wanting."

Cromwell, Major Hœnig tells us, was the greatest general England has ever had. He it was who first after the introduction of fire-arms taught cavalry their proper tactics, and raised that arm of the service to a pitch of efficiency that has never been surpassed, if ever equalled. After him, Marlborough was a great leader of cavalry and of infantry alike, but since his days where are we to look for our English cavalry leaders? Individual regiments, individual commanding officers, have over and over again performed glorious deeds; but can we mention any example of a successful cavalry engagement on a large scale, planned and executed skilfully throughout? Certainly not Waterloo, where the initial success of the Heavy Brigade, glorious as it was, was obliterated, owing to the charge being made with no reserves, so much so that the French talk with pride of the overthrow of the Scotch Dragoons by the French Lancers. Not certainly to Balaclava, where the Heavy Brigade, successful as it was, was caught absolutely unprepared, and where the Light Brigade

was led to immortal ruin. Opportunities there have been not made use of, such as the chance that presented itself to Lord George Sackville at Minden, or in later days to our cavalry division on the day of the battle of Charsiab in Afghanistan, when a little enterprise would have resulted in the whole of the enemy's army being taken in rear. "Only the Seydlitz was wanting."

Let us hope that on the next occasion the right man may be in the right place.

With regard to the third point, battle-fields are not level plains, but present, as a rule, great variety of ground and cover, which will often give opportunities to cavalry judiciously posted to surprise infantry. Further, the deadly effect of rifle fire has been so much increased by modern improvements in fire-arms, that infantry exposed to heavy fire must necessarily sustain so great losses as to suffer a considerable loss of morale. There will be many moments in a battle when bodies of infantry will be so completely shattered as to be at the mercy of good cavalry, if only it be at hand and led to the attack at the right moment.

"At such a time," to quote Major Hœnig, "it is a matter of indifference whether the broken remnants have a repeating rifle or a pitchfork, for their nerves are shattered, and their numbers count for nothing."

Captain Altham questions the accuracy of this statement, but it is a statement, I think, the truth of which all of us who have taken part in our recent little wars can thoroughly endorse, even without the intense strain of accurate rifle fire telling upon the ranks. The author of the German brochure called "*A Summer Night's Dream*," has told us how in many cases even the successful German troops hung back and refused to advance from under cover; and we can all of us remember episodes not pleasant to look back upon in our own recent campaigns. Scares and stampedes were unfortunately not such unknown events to us as we could have wished. After a certain period of high tension men's nerves are apt to give way. No better example of this can, I think, be given than the fact of which I, for one, was an eye-witness, that twice during the night following after the capture of the camp of Tel-el-Kebir, when every man in our force had seen the whole country white with the Egyptian troops in wild disorder of retreat, and knew that their guns were all captured and their ammunition destroyed, twice during that night was the greater part of the force woken up with an alarm that the enemy was attacking the camp, and once, at least, the drivers of a battery of artillery began to harness up their horses. Captain Altham speaks of "Valentine Baker's magnificent feat of arms at Tashkessen," as an argument to show that "demoralization is by no means a necessary accompaniment of the use of the breech-loader." I happen to have a letter from the late Colonel Burnaby, written from Constantinople after the retreat to the sea from Tashkessen. He says: "We had a magnificent fight at Tashkessen, and Baker with only 2800 men gave 30,000 Russians, mostly of the Guard, what the Yankees would call most particular hell. We had another fight at Meska, near Okluka, in the mountains. This was first of all merely a reconnaissance, but turned into rather a serious engagement. The

\* "*Die Kavalerie Division als Schlachten-Körper*."—Berlin, 1884.



Turks were not in a fighting humor that day, and they had the worst of it." The Turks, as he afterwards explained to me, bolted like rabbits. These Turks, remember, being the same men who had covered themselves with immortal glory two days before.

I think it must fairly be allowed that there will be occasions when the infantry will be badly shaken, and at such a time the moral effect of a large mass of cavalry charging down on them will be tremendous. Of course the difficulty will be for the cavalry to make sure of the infantry being shaken, and which it will hardly be close enough to see. But there are always certain indications of wavering that to a born cavalry leader, not afraid to be riding well ahead of his squadrons, and watching all that is going on, will convey the necessary information. Only he must be ready to act at once, and not like the leader of the 6th Cavalry Division at Rezonville, wait to be sent for.

Mistakes will undoubtedly be made, and heavy losses will be sustained, but the proverb about the omelette and the eggs is true, although trite, and there will undoubtedly be glorious opportunities on future fields of battle for those who are skillful enough and fortunate enough to seize them.

This brings us to the consideration of the numbers that will actually take part in such a charge.

Out of the large number of squadrons mobilized on either side in 1870, it is remarkable how comparatively few were ever brought together for a charge. There was no leader on either side competent to concentrate and handle large masses of cavalry. When we look back to the three great leaders of cavalry in modern times, Cromwell, Frederick the Great, and Napoleon, we find that they all employed their cavalry in large masses to obtain decisive results.

Ziethen at Kolin had 100 squadrons under his command, and charged with 65 against 60 under Nadasdy. At Lanowitz 69 Prussian squadrons charged 71 Austrian, at Prague the numbers were 80 to 70 respectively.

At Aspern Bessières charged with 40, Murat at Eylau with 80 squadrons, Napoleon launched into the midst of a battle divisions varying from 16 to 30 squadrons. Since his time nothing like these numbers have been employed together in a charge, the largest numbers recorded being the Austrian cavalry at Königgrätz and the charge at Rezonville. In the former battle the 1st and 3d Reserve Cavalry Divisions, each of 2 brigades of 3 regiments, *i.e.*, 12 regiments, or 48 squadrons in all, made repeated and most gallant charges, but each division acted separately, indeed, each brigade and almost each regiment. (Vide official account.) In the latter battle it is curious to observe that the Germans had 78 squadrons in the field, but although several charges of a few squadrons at a time took place, the greatest number brought together for one charge was 21 against 24 French squadrons.

The deficiency undoubtedly has been not in the number of squadrons available, but in the power of concentration and handling. "Seydlitz has been wanting."

Just as at the battle of Leipsic, Murat with 10,000 inferior cavalry was able to hold his own against 30,000 of the allies, because there was no one to handle the latter.



There appears to be a general opinion on the Continent that the next great war will see an attempt at any rate to reproduce something similar to the large masses led by Ziethen and Seydlitz on the battle-field.

After the battle is over the duties of cavalry are to complete the rout of the enemy after a victory, or to cover the retreat of its own troops after a defeat.

The gallant self-devotion of the two Austrian divisions who sacrificed themselves to save the whole army at Königgrätz can hardly ever be surpassed, although it is possible that with greater masses, better handled as a whole, such as we hope to see in the wars of the future, equally decisive results may be obtained with less loss to the cavalry.

For the pursuit of the enemy, almost more than for any other duty quick, active leaders are necessary, ready to act at the right moment.

Major Hœnig says: "The fact that the beaten French army after Wörth was able to reach the Vosges passes, is, and remains, the greatest omission, from a tactical point of view, of our leaders. A pursuit till the complete dispersal of the enemy was easier in this case than after Waterloo."

I have already alluded to the failure of our cavalry division in Afghanistan.

For all the duties of cavalry careful and incessant training and preparation are necessary. Wars are now sharp and decisive, and it is no longer possible for cavalry to learn the Art of War during war.

The peace organization of the cavalry on both sides of the Rhine has been much discussed. In France, according to the existing system, which is, however, in process of modification, as already mentioned, 38 regiments belong to brigades, one attached to each army corps, and 36 to independent cavalry divisions. The author of "*La Cavalerie dans la Guerre Moderne*" criticises this arrangement severely, and he says that the regiments belonging to the former category, who are never trained in larger units than brigades, are absolutely sacrificed as far as their tactical preparation for employment in large masses is concerned. He recognizes the great disadvantage of having two kinds of cavalry.

In Germany the cavalry regiments are attached for administrative purposes to the different army corps, and on the outbreak of war are formed into divisions, or detailed as divisional cavalry, as required. Only two permanent divisions exist at present, viz., the Guard division and the Bavarian division. It is proposed in war to form eight divisions, each of three brigades, and after allotting the cavalry already described as necessary to the infantry divisions, to form the remainder into brigades attached to the different army corps. It has been proposed in Germany to form more permanent cavalry divisions in peace time, but the objections to this have been very clearly stated by Prince Kraft (17th letter).

One main objection he points out to be, that it would be still necessary to have a cavalry regiment attached to each division, and that there would be two classes of cavalry, the regiments in the division looking down upon the divisional cavalry, with very injurious results. Further, he maintains that for any one arm to be isolated is a mistake, and that cavalry should be in a position to constantly coöperate with and associate itself with the other

arms. The advantage of having peace and war formations identical does not, says Prince Kraft, compensate for the above and other disadvantages. During mobilization and transport to the frontier, all movements must be ordered by the headquarter staff, and no general of army corps or division can possibly have his regiments under his eyes, or even know where they are, until they arrive at the point selected for concentration.

"Changes are inevitable in many commands, and in 1870 many corps had new generals assigned to them. Well drilled and organized regiments will have no difficult in settling down into a new brigade or division." In 1870 the want of cohesion noticed on the part of the cavalry divisions was due to the fact that only a small number of regiments had had any practice in divisional manœuvres.

Since Prince Kraft wrote, the divisional cavalry has been considerably reduced, as already mentioned; and it has been suggested by several writers that the cavalry necessary for duties with the infantry should be composed of reserve or landwehr squadrons. The question of permanent cavalry divisions appears, consequently, a more open one.

And yet for cavalry the one thing needful is practice in manœuvres on a large scale over a considerable extent of country.

The author of "*La Cavalerie dans la Guerre Moderne*" points out the difference between the practice of *evolutions* and the practice of *manœuvres*, the former being merely the means to the end.

The best *drilled* regiment may fail on the battle-field if officers and men have not been trained to manœuvre on an extended field.

In 1884 the author of "*The Cavalry Division as a Body*" wrote that with the exception of one-seventh or one-eighth, the German cavalry only knew the brigade as the largest exercising unit, but during each of the last four years the cavalry of two different army corps has been collected and exercised for ten days in brigades and divisions, previous to taking part in the Imperial Manœuvres. Sixty squadrons manœuvred together near Berlin in 1888, under the Emperor. In 1890 there were special cavalry manœuvres for the regiments of five corps, besides the Guards' division, the cavalry regiments belonging territorially to each corps being supplemented by one or more brigades from other corps. Altogether, as nearly as possible, one-half the total number of cavalry regiments in Germany were drilled and manœuvred in divisions, and in both '89 and '90 as many as 76 squadrons were brought together on one field.

In France from '81 to '85 cavalry divisions were formed and manœuvred together, composed of regiments taken alike from the independent cavalry divisions or the corps cavalry. These manœuvres were interrupted after '85, on account of expense or other reasons, but resumed in a modified form in '87, being confined to the cavalry division alone. In 1890 two cavalry divisions, the 3d and 5th, manœuvred at Chalons for 12 days. All the other brigades carried out eight days brigade manœuvres, besides taking part in the corps or infantry division manœuvres. The brigades attached to one of these corps (the 2d) were formed into a provisional division.

The French cavalry is, consequently, not all trained on an uniform

system, and is, says the author of "La Cavalerie," inferior in this respect to the German cavalry.

In both countries the great desire at the present moment appears to be to make the manoeuvres carried out annually by a greater or less portion of the army as like real war as possible.

Prince Kraft has some interesting remarks on this subject.

The defect, he says, of most cavalry division manoeuvres consists in the fact that the cavalry are collected and formed up first of all as on a field of battle, and no opportunity is given for practising what would frequently occur in real warfare, viz., the transition from column of route to formation of attack, in which the cavalry that could deploy quickest would have a great advantage. He proposes a scheme by which two cavalry divisions should start, say 180 miles apart, and have to reach an intermediate point in three days. On the way the divisions would march in different columns, and practice concentration and deployment at different points, thereby gaining excellent practice.

As the author of "La Cavalerie, etc.," points out, a complete programme of cavalry manoeuvres will comprise two periods, one of preparation in a camp, the other of execution on varied ground.

## TWO BRIGADES.

*From the German of CAPTAIN FRITZ HOENIG.*

BY CAPTAIN PAUL ROEMER, U. S. A.

*(By permission of the publisher, F. Luchhardt, Berlin.)*

### II.

*(Continued from No. 51.)*

THE attack of the 19th half-division (38th Brigade) on the Heights of Bruville in the battle of Tronville, 16th of August, 1870.

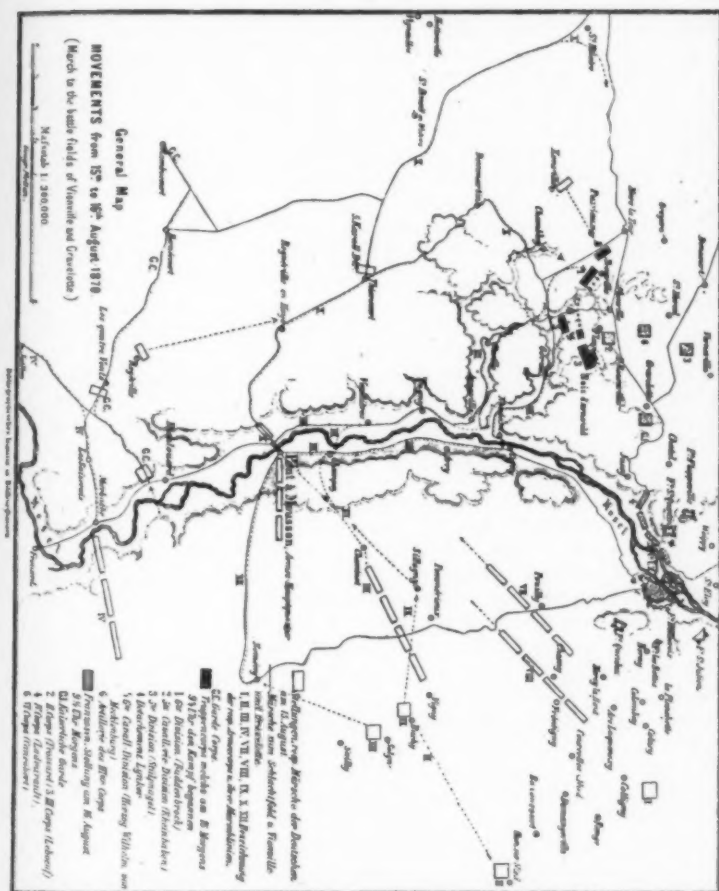
(a) March to the battle-field: The 38th Brigade, regiments 16 and 57, with the 2d light and 2d heavy battery and the 2d and 3d company pioneers of the X. Corps, under command of General v. Schwarzkoppen\* left Thiaucourt at 5.30 A. M., August 16th, for St. Hilaire. The brigade of Guard-dragoons with one horse battery were an hour in advance. Its commander, Count Brandenburg II. hearing the sound of artillery firing to the eastward, decided, with the consent of General v. Schwarzkoppen, to advance in that direction. The 1st Regiment Guard-dragoons and the horse battery were placed at his disposal for this purpose.

General v. Schwarzkoppen knew before he started from Thiaucourt that a reconnoitring detachment under the chief of the general-staff X. Corps,

\*Lieutenant-General v. Schwarzkoppen commanded the 19th Division, Major-General v. Wedell the 38th Brigade. The 37th Brigade of the 19th Division was employed at another part of the battle-field.

Lieut.-Colonel v. Caprivi, had been sent out to find the position of the enemy who was known to have been near Vionville on the previous day. He concluded that the firing came from that direction.

It was oppressively hot yet the infantry arrived at St. Hilaire a little



after 11 A. M., having made only one halt of ten minutes at Woël. The distance was at least 22 kilometres (13.6 miles).

The enemy was supposed to have marched off toward Verdun partly on the road upon which the brigade now stood. The command went into camp southeast of St. Hilaire. The outposts were furnished by II/57 and one troop of the 2d Regiment Guard-dragoons.

The church bells in the surrounding villages were ringing as signals to the French army.

Not a breath of air refreshed the atmosphere. No enemy was in sight but the thunder of cannon increased. It sounded as if coming from our right rear. Nobody dared believe that we were in rear of the French Rhine army. Soon it became a certainty.

The writer was sitting with several others near the advance guard on the right flank, talking over the matter. The troops look at such a situation with other eyes than their leaders. The former, as a rule, know nothing about the object in view and the measures taken at army headquarters. They are therefore easily alarmed under unusual circumstances. But everybody here knew tolerably well the strategical situation and the object of the march.

The matter had been talked about on the march, great results were expected, and every one was surprised to find St. Hilaire unoccupied. General v. Schwarzkoppen decided to remain there until he received new orders.

Suddenly several horsemen came in sight from the east at full gallop. Everybody was on the alert in a moment. An officer arrived his horse covered with foam. The alarm signals sounded and the battalions moved out at 12 M. for Chambley. We could hardly trust our eyes when the place had been found on the map.

The order of march was as follows : 4th troop 2d Guard-dragoons, F/16, 2d light battery, I/16, II/16, 2d heavy battery, F/57, I/57, 2 pioneer companies. II/57 remained at St Hilaire with a few orderlies from the Guard-dragoons to protect the train.\*

As far as Suzemont it had been the commander's intention to pass through Ville sur Yron and attack the enemy's flank. Now he deemed it too risky to advance further in this direction. From horseback long lines of fire and heavy clouds of dust could be observed. The heavy fire and the many wounded, who did not give a very cheerful account of the battle, may have induced him first of all to seek connection with the remainder of the X. Corps, and he acted rightly.

The history of the General Staff, page 604, says : "The four battalions, after forming line of battle at Suzemont, continued their march in the direction of Tronville. Time, 4 P. M."

The brigade formed line of battle only once, not at Suzemont, but about 600 metres southwest of Mars-la-Tour, fronting Tronville, on the left side of the deep valley of the Yron. The slopes were so steep that a surgeon of I/57 fell over with his horse.

The chaplains of both confessions made a few remarks to the troops which caused a short delay. It is 15 kilometres from St. Hilaire to Mars-la-Tour. We marched without halting and arrived southwest of Mars-la-Tour by 3.30 P. M.

At Suzemont General v. Schwarzkoppen had ridden to the front to reconnoitre the situation and surrounding country. About the latter he had no

\*F stands for fusilier battalion. The Roman numbers stand for battalions, the Arabic for companies and the number under the line is that of the regiment.

difficulty as General Brandenburg had been skirmishing with the enemy since 12 M.

When the French IV. Corps arrived and began to form on the left of the III. Corps, we were compelled to retreat to Mars-la-Tour where we arrived at 3 P. M. From this it is certain that the IV. French Corps did not take its place in line of battle before 2 P. M. General Brandenburg had been in the best situation to judge the strength of the enemy and the nature of the country. It is not known whether complete reports were made by him to General v. Schwarzkoppen and if any exchange of opinions had taken place between the two.

The German line of battle, which up to 2 P. M. had extended as far as the north side of the bushes of Tronville and across the highway Gravelotte-Mars-la-Tour-Verdun, was pushed back to this road. At 2 P. M. the French Division Grenier had taken possession of the heights of Bruville (846 feet) and at 2.30 P. M. the north side of the bushes of Tronville. It was joined by a part of the Division Cissey, forming in the direction of Greyère Fe. The 5th chasseur battalion of the Division Grenier had hastened forward and by 2.30 P. M. had taken possession of the forest between two rivulets north of Mars-la-Tour; later the 98th Regiment was added. Although the French cavalry posted near Ville sur Yron had not been very active, it had nevertheless observed the approach of hostile forces from the rear and reported the fact to General Ladmirault, who in consequence had ordered the above movement and quickly taken possession of the naturally strong position north of Mars-la-Tour.

The height of Bruville (846) north of the highway Vionville-Mars-la-Tour was the strategical point on the left wing of the battle-field. It commanded the country in all directions as was shown later. From it the French commanded Mars-la-Tour, and the whole position of the 38th Brigade. If it could not have been occupied before the arrival of the French, the attempt to storm it should certainly not have been thought of after they had taken it.

The case where an isolated weak brigade advances against the flank of an enemy is of such a peculiar nature, that its appearance upon the battle-field must have caused surprise and consternation. The enemy, who could observe its advance and formation, naturally supposed that other troops would follow from the same direction, and that the forces just arrived were only the advance. Had we been placed in the same position, we would have come to the same conclusion. It is necessary to make particular mention of this, otherwise the sudden stop of General Ladmirault's counter attack, at the very moment when victory and the fate of the French army were in his hands, remain unexplained. It must be mentioned that the captured Guard-dragoons informed him that the Prussian Guard-infantry had also arrived.

This interesting situation compels us to examine the changes that might have resulted if General v. Schwarzkoppen had taken the initiative.

Shortly after 11 A. M. his brigade had arrived at St. Hilaire ready to continue the march. It was therefore in his power to march. Was he permitted to do so? Without doubt yes, provided he reported at once to higher author-

ity the deviation from the strategical disposition. He had orders to reach St. Hilaire; he knew that Lieut.-Colonel Caprivi had been sent out to reconnoitre via Chambley to Vionville. The sound of cannon came from that direction. It was heavy and continuous, and could not result from a skirmish with a reconnoitring party. The initiative should have governed under these circumstances. The strategical situation had changed, the original dispositions had become useless. General v. Schwarzkoppen came to a doubtful resolve, he consented to the departure of General Brandenburg with part of the cavalry and one battery, while he remained at St. Hilaire, at the very moment when the above mentioned strategical situation had been made clear by the heavy artillery fire. If he decided on a division of his forces, should he not have ordered part of his cavalry to remain and have marched without delay, towards the sound of the cannon? Had it proved, later on, that more cavalry was needed it could have been sent for, and would have arrived at Mars-la-Tour by 2 P. M. It can therefore be said that the sphere of the different arms was not understood. The cavalry had to do the work of infantry and the infantry that of the cavalry.

General Brandenburg had reported his departure from St. Hilaire at 10 A. M. Why did not General v. Schwarzkoppen, after passing Woël, direct the whole brigade on Mars-la-Tour via Vionville? We take it that he must have heard, as we did, the sound of cannon on our right since 9 A. M. Why could he not have done this after the cavalry had discovered no enemy, north of St. Hilaire? Had he at 10 A. M. directed his march from Woël, to Mars-la-Tour, which was possible, the brigade would certainly have arrived on Bruville height by 1 P. M. without a skirmish, and the tactical success of the day would have remained with us.

(b.) The battle-field:—So we arrived southwest of Mars-la-Tour at 3.30 P. M., not without adding another mistake however. Of the six battalions, one was left at St. Hilaire to protect the train. This task should have been given to a troop of cavalry, and the whole of the infantry taken to the battle-field. The heights north and west of Mars-la-Tour commanded that village—a poor little place at the time. It was occupied by a few mounted chasseurs who retreated at our advance. The distance from the bushes of Tronville to the highway Mars-la-Tour-Tarny is 2500 metres; from Bruville-height-Greyère Fe to the high-road Vionville-Mars-la-Tour, the same. East from Mars-la-Tour a valley extends in a curve to the east and north of the village, and joins the Valley of the Yron. Another valley joins the former 600 metres south of Greyère Fe, coming west from the Bois de Tronville, after extending to the east and north around the Bois, and passes away in a westerly direction. Its average distance from the French position (Bruville heights-Greyère Fe.), is 650 metres. The slopes are not steep. Between Bois de Tronville and Greyère Fe they average about 12 metres, as do those of the first mentioned valley. The ground was dry on the day of battle. Bruville heights, the highest point of the French position (846 feet), declined westward to 720 feet. Between this height and Greyère Fe a road leads from Bruville to Mars-la-Tour. East of the height another road from Bruville joins the first at Mars-la-Tour. The best approach to the enemy's position led through the valley extending north, which Gen-



eral Ladmiraault observing, had closed, before the arrival of the 38th Brigade, by occupying the thicket in the angle formed by the meeting of the two valleys. Passing around the French position, with the little force at disposal was made thereby impossible. A mound (780 feet) extended 150 metres to the east from the first Bruville-Mars-la-Tour road at about 80 metres south of the valley. This mound was of great importance during the action, for it formed the only cover on the whole field. Later on we met with obstacles which seriously obstructed our movements.

The ground around Mars-la-Tour was partially meadow-land, divided from other fields by wire fences, and extended across the highway to the mound, covering a space of about 300 metres. Although this space was not entirely covered by the enemy's fire, still the cutting down of the fences interrupted the movement, and the 57th Regiment suffered severely from artillery, mitrailleuse and infantry fire. The troops did not know the character of the battle-field and the development of the five and a half battalions was executed with such haste, that we had no time to look after obstacles—our only thought was to get at the enemy.

The higher officers could and must have known that these obstacles existed, for that part of the battle-field had been in our possession since 2 P.M. They should have known not only the character of the battle-field, but also the strength of the enemy. This last could have been easily judged immediately before the attack, for the deployed hostile lines could be fairly well seen with the naked eye.

The 38th Brigade could dispose in line over five and a half battalions—not quite two men to the metre. To reach the enemy the troops had to pass over 1900 metres of open gradually sloping ground, covered with unknown obstacles. It was easy to predict a failure under these circumstances.

To-day it is stated that the enemy was completely demoralized by the energetic attack of the 38th Brigade. It is easy to say so after the battle. We maintain that it was not the attack of this isolated little brigade which brought to a standstill the happily taken initiative of General Ladmiraault, but the fear of the enemy, inspired by the belief that additional German forces must soon arrive from St. Hilaire. He could not take it for granted that a single isolated brigade had advanced against his right rear. Such a movement is against all principles of military science. The enemy feared for his right flank and the attack by additional forces from St. Hilaire. This caused him to hesitate to take full advantage of his tactical success. When General Ladmiraault was asked by the commission appointed to examine into the conduct of the war, why he had not taken advantage of his tactical success, he gave the laconic answer: "Pas d'ordres."

General Schwarzkoppen was southeast of Mars-la-Tour where he received the order for the attack. The movement on Bruville heights commenced at 4 P. M. II/16 advanced west of Mars-la-Tour, I/16 passed through the village followed by F/16; the two batteries, I/57, F/57 and 2d and 3d company pioneers advanced to the east around the village as far as Bois de Tronville. Battalion II/16, which stood nearest to Mars-la-Tour before the movement commenced, advanced directly on Greyère Fe, while the companies on the right wing had to execute a wheel to the left 2500 metres



No unity of action could be maintained. The battalions were repulsed one by one as they approached the enemy's position and those of the right wing arrived in an almost exhausted condition.

(d.) General situation of the battle shortly after 4 P. M. The enemy had received considerable reinforcements since 2 P. M. Great commotion could be observed in the hostile lines near Rezonville (withdrawal of the II. Corps, arrival of a division of the III. Corps and the Garde Corps). In the centre we could see no reduction in the strength of the enemy. It was certainly known by 2 P. M. that the II., IV. and Garde Corps were before us. At 3.15 P. M. the French line of battle extended from St. Marcelle to Greyère Fe. Were we not compelled to believe that the whole Rhine army stood before us?

On the German side two corps, one division, and two cavalry divisions were at disposal. No other troops could be expected before late in the evening. It was now certain that the march of the French army had been interrupted. Flavigny, Vionville and Mars-la-Tour were in our possession. Only our left wing had evacuated the Bois de Tronville, being gradually outflanked by the arrival of two new corps (II. and III).

Our situation was critical between 2 P. M. and 3.25 P. M. The advance of the enemy across the highway Vionville-Mars-la-Tour could be expected at any moment. The highway lost, our hold on the enemy would cease and our defeat follow. By 3.25 P. M., however, the enemy had evacuated the Bois de Tronville.

The history of the war by the General Staff represents the attack of the 20th Division and 38th Brigade as a united movement. The 38th Brigade attacked alone, the 20th Division not at all. Part of the 20th Division arrived at Tronville at 3.30 P. M., and later the whole division formed on the right of the 38th Brigade.

We were certain since midday that three French corps faced us. Why then assail the enemy in such a manner that the attack on the most important part of the battle-field was repulsed, became useless and left no infantry at hand to fill the long gap between Tronville and Mars-la-Tour?

If the French generals had been able men and had acted unitedly under an able commander in chief, the German forces would have been thrown back on Metz, and could not have escaped a severe defeat.

The battle of Vionville was an improvised battle, with all the attendant disadvantages, and was chiefly remarkable for its defective management. Thus it happened that the 38th Brigade attacked too soon, the attack becoming thereby an isolated one, and that a flank attack was carried out without the support of a frontal one. It happened further that Prince Frederick Charles learned, when he heard the firing at Mars-la-Tour from his position southwest of Flavigny, "soon after 5 P. M.," that his "idea of attacking" had failed through an untimely initiative. It also happened, to fill the cup of misfortune, that General v. Kraatz (20th Division) received an order, which should have been carried to the 38th Brigade, and in consequence of which he commenced to retreat toward Tronville. But he received new orders from headquarters, and as soon as he perceived his error advanced again and took possession of the bushes of Tronville.

The history by the General Staff states that the attack of the 38th Brigade was an isolated one and as such not admissible.

In spite of the misfortunes of the left wing of our army, the same thing occurred later with the right wing, where a similar attack was made at Rezonville with like results.

From the above sketch we see that the connection between the chief commander and the higher leaders was defective, and that the latter destroyed the plans of the former by an untimely initiative (38th Brigade) and confused orders (20th Division). In the course of the battle the object of the day "to hold the enemy" was lost sight of in the desire to gain a victory. That we did not meet with a general defeat is only due to the brave conduct of officers and men, and to the fact that the French leader did not possess sufficient skill and penetration to take advantage of the errors committed on the German side.

(e.) Details of the attack. The isolated attack of the 38th Brigade had no connection with the other troops of the X. Corps who fought to the eastward of us. There was even no connection between the battalions of the brigade. The author was from beginning to end, mounted, in the centre of the line, and had a good view in every direction until the powder smoke hid II/16 and I/16 from view.

The battalions advanced north one by one from left to right. The two batteries supported the movement from a position north of Mars-la-Tour. The battalions on the left wing had the shortest distance to cover and advanced furthest north, bravely crossing the ravine of Bruville. They retained this advance to the end of the combat, and can be said to have fought a separate battle. Those companies on the extreme right entered the line of battle at least half an hour later than the left wing.

As far as the mound, the formation of the left wing was as follows: First line—7/16, 5/16, 3/16, 2/16, 11/16, 2 züge of 2/57, 10/16, 1 zug 2/57. Distance to second line, 150 metres.

Second line: 8 and 6/16, 4 and 1/16, 12 and 9/16, 4/57. The formation of the right wing to the Bois de Tronville consisted of first line: 3 züge of 1/57 deployed as skirmishers. The second line, 150 metres distant, consisted of 3/57, 11 and 9/57, 12 and 10/57, 2 companies pioneers.

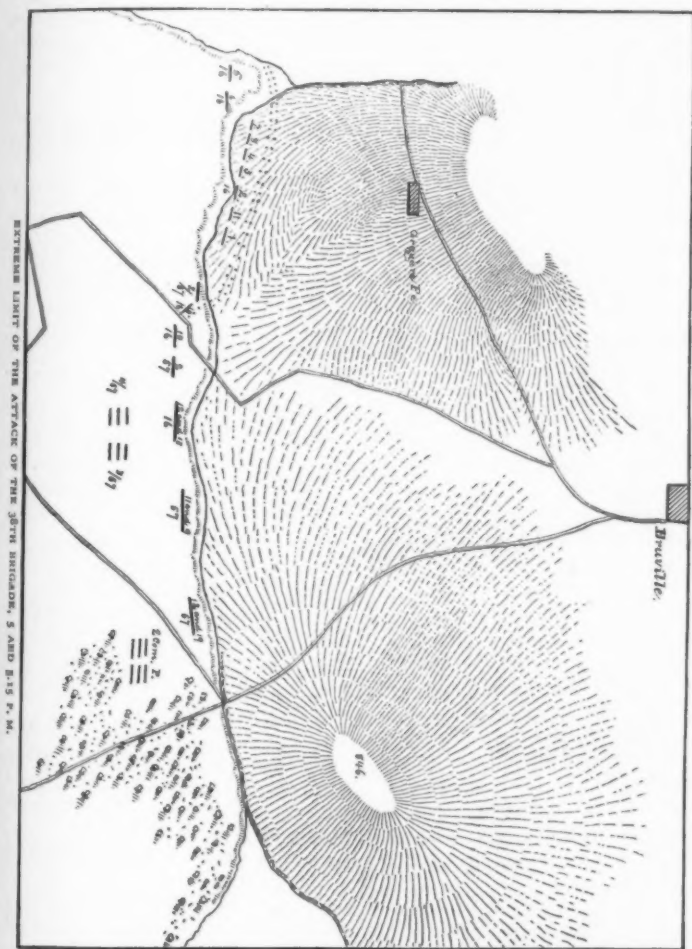
From the mound and the ground north of Mars-la-Tour the line was changed and the brigade, in general, formed one line, the second line moving up into the first whenever it found room.

Our losses were small at first. While we were advancing north of the mound about six battalions of the Division Grenier could be plainly seen coming south at double time. They arrived at the north edge of the ravine of Bruville before we came within 100 metres south of it. We faced them with three battalions and two pioneer companies. II/16 and I/16 crossed the ravine and found the other side unoccupied. Division Cissey was at this time advancing between Greyère Fe and the Bruville-Mars-la-Tour road.

The right wing and centre of the brigade suffered from a severe double fire from the north edge of the ravine and from Bruville height. Our losses increased. We had hoped to flank the enemy but instead were flanked from

Greyère Fe by division Cissey. Three French brigades opposed us in deployed lines at 5 P.M., later a half brigade and chasseur battalion were added.

The enemy was lying down. Nothing could be seen of him except part



of the head cover. The German battalions, without cover, suffered from a terribly destructive fire. The line halted about 80 metres south of the ravine and attempted to return the fire. No use. The men lay down but this gave them no protection. Two-thirds of the officers were already dis-

abled, and the body deprived of its soul broke down. The men held on a little longer, then the unavoidable happened—"Retreat!"

The five and a half battalions did not emerge a brave successful storming party on the other side of the ravine. Of the twenty companies only eight reached the north edge of it. As we have stated above, these companies had opened the attack, had the shortest route, and found the enemy less prepared on this part of the battle-field. They arrived at the ravine before the Division Cissey, and when the latter came up they had to give way to superior numbers.

After we commenced to retreat, the French approached us within about 40 metres and on the left wing got mixed up with our men, many of whom were taken prisoners.

It was not a destructive fire of Zündnadel against Chassepots. The fire struck us only. On the retreat the losses increased to a degree approaching dissolution.

When the French lines had advanced within 150 metres of the mound, our 1st Guard-dragoons charged and rode down the enemy's infantry. The men rushed back, covered their own front, forgot to fire or fired wildly, and threw away their arms and equipments. A general pause ensued along the whole line of battle. Even the artillery remained silent. The battle seemed at an end. The brave horsemen had saved many of our men from capture, the author among the number. As we were being carried back wounded the signal, "The whole line advance," was heard. It came from the 20th Division. A few moments later two groups of the 38th Brigade could be seen; one stood in the angle formed by the bushes of Tronville and the highway, the other 500 metres east of Mars-la-Tour. The first was the 57th Regiment under Major v. Medem, the second, the 16th under Lieutenant-Colonel Lannow.

Over a space of 2000-2500 metres, one-third of the companies were deployed as skirmishers. Skirmishers with but one zug as supports were at first the formation of the first line. The second line followed in half battalions. When the first halted south of the ravine, the second moved up into the first whenever room could be found. Two companies remained in close column 200 metres further south and lay down.

The brigade had employed all possible formations, "swarms" of skirmishers, closed züge, closed company column, half battalions in column and in line, and this upon a battle-field of uniform character. This was a tactical error from the moment the mound was passed. The regiments advanced over 1400 metres under the mass-fire of the enemy.

The history of the General Staff gives the strength of the brigade as 95 officers and 4546 men; and the loss as 72 officers and 2542 men.

Whether battalions II/16 and I/16 advanced with "frequent halts, lying down, rushing forward, etc.," we cannot say, as these battalions were not always in sight. But we are certain that F/16, I/57, F/57 did not advance in this manner.

The Guard-dragoons wheeled from right to left and charged in a curve 250 metres north of the mound and back again around Mars-la-Tour.

The material result of our attack was nil. Lieutenant v. S.—who

visited the French position next morning relates that he did not find ten dead bodies of the enemy on the ground north of Mars-la-Tour.

The brigade had been without rations during the whole day.

#### REVIEW.

Of the two attacks which we have attempted to relate from reliable sources, the first is principally of historical interest in the present state of our infantry tactics. Its details could not be carried out against an enemy armed with breech-loaders, even if the attack were made under cover, whereas the second attack is almost the only source from which, if properly considered, we can derive correct principles for our tactics of the future.

What was formerly possible in the tactical management of a brigade is excluded at once by the present flat trajectory, far carrying breech-loader.

To determine these principles the episode must be examined in all its details, and as regards persons and events, must be treated with cautious judgment.

Notwithstanding the difference in the general situation of the two actions, in the numerical strength of the contestants, in the arms and the unlike results of the attacks, both offer incidents which incite to instructive meditation. For this reason we have devoted to the subject so much space and several years of careful study.

The object for which the enemy fought differed in the two cases. At Probus-Bor the enemy, by defending the forest of Bor, intended to cover a retreat that had already commenced. At Vionville-Mars-la-Tour, however, the French wished to repulse the German attack and retain the battlefield.

The active forces at Probus-Bor were equal to those of the assailant, at Mars-la-Tour they were 5 or 6 times greater. The armament of the Saxon-Austrian infantry was inferior to our own, and their artillery equal, if not a little superior. At Vionville the fire-arms of the French infantry excelled our own in shooting power, while the German artillery had the advantage in this regard. The attack at Probus-Bor succeeded, while that on Bruville heights led to the severest tactical defeat which any assailant suffered in the whole campaign of 1870-71.

Conditions were equal at Königgrätz and Mars-la-Tour :

1. In regard to the moral condition of the Saxons and French.
2. In regard to their tactical ability.
3. In regard to the character of the battle-field.

It is true that the position in the forest of Bor was fortified, but the French at Mars-la-Tour were protected by a ravine extending in front of their position. We must not overlook also the obstacles (wire fences) over which the German infantry had to pass in face of the enemy's fire.

The attack of the 28th Brigade on Probus-Bor and that of the 19th half division (38th Brigade) on the Bruville heights are especially instructive in regard to the leading of large bodies under fire. What was done, what omitted? The will to lead was the same in both cases, not so the ability.

We hesitate to admit that the situation at Mars-la-Tour was more difficult than at Probus-Bor. We might even call the latter more difficult,



because there leaders and troops were without practical experience, while at Mars-la-Tour all leaders and some of the men had this experience. Besides the time of armed peace during 1866-70, and the evident desire of the French for war, compelled us to study their tactical system. Of this the verbal and written instructions to the army before the War of 1870-71 bear witness.

Therefore we cannot admit that we did not know at the beginning of the war what was before us and what was expected of our leaders. The leaders knew that united direction would cease upon an open battle-field under a destructive infantry fire, and that the troops once placed, control over them would be lost. If this was certain no practical results could be gained under these circumstances. And if the generals exposed themselves in order to force success—which was repeatedly done—losses among the higher officers could not be avoided, as results showed. Of a large body of troops nothing but the shell would remain. Broken down physically and morally, without a leader, without connection, they would be of no further use for the time being.

It is wrong, perhaps, to view abstractly the actions of separate bodies of troops, as we are in the habit of doing with the tactical exercises in time of peace.

Front attacks against an enemy well in hand have little chance of success. This must be looked for more and more on the flanks. The battle of the Elbe army on July 3, 1866, of which the attack of the 28th Brigade formed part, is an example. The manner of its advance must be condemned, for the statement in the history of the general staff that it was compelled to wind its way along a narrow road (Nechanitz) is an error. Excepting the resulting delay of two hours, the excellent conduct of the Elbe army (14th and 15th Divisions) deserves entire approbation. The initiative of the subordinate leaders never passed the boundaries determined upon by the superior leaders. As soon as one success was gained means were taken to secure it before passing to another. Accordingly we have here numerous separate combats, but never without united and connected guidance. Such a progressive, systematic and cautious proceeding deprived the victors, however, of great results. There can be no doubt but that the whole of the 28th Brigade, after the capture of the forest of Bor, should have advanced without delay on Briza. The moral and tactical condition of the brigade permitted it and the general situation demanded it. There was sufficient force at hand to hold the position gained at Bor. These cautious tactics are explained when we consider that the enemy had not as yet been overcome in a great battle, and his military ability demanded respect. Indeed, the situation required the immediate presence of the higher leaders at the points of decision.

In this respect again the attack of the 28th Brigade offers a good example. Recent military history has taught us how easily the present mode of fighting can degenerate under a destructive infantry fire into a combat of numerous companies and still smaller divisions, who, encouraged by the bold initiative of their officers, strive to advance.

We have seen but little of the ruinous effects of such individualized fight-

ing. But a feeling of uneasiness comes over us when we consider the question: What will be the result of such individualism when followed by defeat? The attack of the 38th Brigade (Aug. 16, 1870) could have answered this question if the enemy had not displayed such inconceivable stupidity and faulty economy in the use of his troops.

*(To be continued.)*

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LETTERS ON ARTILLERY.

BY PRINCE KRAFT ZU HOHENLOHE INGELFINGEN.

Translated by Major W. L. HASKIN, U. S. A.

XVI.

YOU say that I contradict myself when I assert that the regulations should be considered sacred, and then proceed to express views that do not accord with them.

I do not think so. It is possible for one to carry out strictly certain provisions of the regulations, and yet be of the opinion that it is desirable to modify those provisions. I certainly did this when I commanded a regiment. I required that the regulations should be strictly observed, point by point, although they were at that time very antiquated. But, on the other hand, I did all in my power to have them modified by proper authority, until finally a commission was appointed for their revision, a commission of which I was the first president.

After the War of 1870 I had, as a result of the experience then acquired, proposed to simplify them still more, so that the troops could have all the time possible in which to acquire still greater precision in the execution of the elements and of the evolutions thus simplified.

It is certain that the experience gained in the War of 1870 has been fully made use of in the most recent regulations,—those of August 23, 1877. As a whole they are excellent. Yet a considerable number of artificial evolutions and formations have been introduced therein; and, when such are found in the regulations, it follows that they must be taught the troops. Considerable time is thus used, and yet they never could be executed in the field.

This is entirely wrong, for officers and men will be sure to believe that they can employ them in active service, and certain of those who have seen no field service will perhaps attempt to apply them in their first engagement, and, in so doing, will suffer loss.

It is true that the drill regulations must contain many things which will not be seen in actual war, as for instance, all of the first part, which treats of instruction on foot, also many of the evolutions of the third part,—“School of the piece mounted.”

I am tempted to ask for the artillery what Colonel von Rosenberg, in his “Zusammengewürfelten Gedanken,” demands for the cavalry; that is,

that the regulations should indicate the evolutions that should be executed only in time of peace, and those to be used in war.

But the new regulations contain also evolutions that I deem useless for the artillery even in peace, and these consequently absorb uselessly a part of the time devoted to instruction, for, from the time they are found in the regulations, they must be taught the troops. On the other hand, no mention is made of certain formations which, in war, are so practical and convenient that I am tempted to call them indispensable.

Before going into details I wish to cite again the letter of Colonel von Dresky. He writes concerning his first appearance upon the field at Vionville:

"Let me tell you my experience upon this occasion.

"The drill regulations of 1877 concerning the manoeuvres of field artillery (4th part, par. 193,—movement to the front into position) recommend for the flank movement the employment of the platoon column with closed intervals. But the battalion of horse artillery, in executing the movement that I described above, formed in column of pieces.

"This last formation had been adopted after mature reflection, because it was best suited to the object to be accomplished, and is, in the greater number of cases in actual war, the most simple and most natural. But if the battalion had been formed in column of platoons, it would have been forced, when it reached the bridge over which only one piece could cross at a time, to halt in order to break into column of pieces, and, without doubt, would have lost severely, for the enemy's fire was violent.

"My experience on this occasion decided me to execute thereafter all flank movements under fire with my batteries formed in column of pieces. Thanks to this formation I met with no losses.

"When the flank must be presented to the enemy, it matters little whether the column be long, for the enemy's projectiles do not pass to right or to the left of it, they fall short or go over. It is only important that the column should not be deep. But two pieces marching abreast (at full or closed intervals) present a mark of greater depth than a single piece.

"At Beaune-la-Rolande I had to make a flank march of about 1500 paces in face of two of the enemy's batteries, and I suffered no loss. The greater number of the enemy's shells struck short, some went over, none struck us, and the ground was too soft for the pieces of those which burst to reach us.

"At Chilleurs-aux-Bois, on the 3d of December, 1870, I had also to make a flank march of about 2100 yards in order to reach the position I had selected. I had with me all the corps artillery, and we could advance but at a walk, because the soil was marshy and very soft, although partially frozen. I received the fire of three French batteries, but, thanks to the soft soil and to the formation in column of pieces, I met with no losses.

"On the 11th of December, 1870, near Mans, the battalion of horse artillery was ordered to open fire upon the French troops that had been seen upon the heights of Champagné. General von Bulow and I preceded the battalion in order to select the position in which to establish it. But the ground was covered with dense hedges, and as we could not find a position

even fairly suitable, we decided not to employ the artillery. The battalion had to enter a little field surrounded with earth embankments in order to turn, because the road, bordered on both sides by these hedges, was too narrow to turn in. On the return march the enemy's projectiles took us in flank. It was impossible to see the place where their pieces were posted. The shells fell short or passed over. None struck us, because our formation in column of pieces presented not enough depth."

I will also add, in recalling my experiences in the campaigns of 1866 and 1870, that I myself have never caused my united batteries to take any other formation than the column of sections and the battery front. I will except the beginning of the battle of Königgrätz, of which I have already spoken, and my evolutions at Sedan by which the second battalion of foot artillery occupied its last position. It limbered to the front, wheeled by platoons into column with closed intervals, and, thus formed, crossed the defile in the woods to post itself on the left of the first battalion, which had already opened fire. In truth I myself gave the order to form the column by platoons, although I thought it preferable to form the column by piece. The battalion met with no loss, but it would have been in still less danger of loss had it taken this formation.

It follows—pardon me if I repeat what I have already said in preceding letters—it follows, I say, that the column by piece and the battery front are the only formations the regulations should prescribe as practicable in war for field batteries.

When we were formed in column of route during the war, we adopted either the formation for the forced march, or that in *échelons*. We employed the first always as the ordinary march formation, because we could never know when we would be called upon for a forced march, and the cannoneers would find themselves at once near the carriages upon which they should mount. The *caisson* of each piece was considered as permanently with it, forming a section. The battery included eight of these, the 7th and 8th, together under the command of the quartermaster-sergeant, included the two subsistence wagons, the field forge, the baggage wagon and the spare horses.

The battery formed *échelons* but a short time before entering the battle-field. When the battery advanced to go into action, it was followed immediately by the ammunition wagons of the first *échelon* as I have already set forth. The second *échelons* of all the batteries, together, remained behind under the command of an officer. When the battery, not within the sphere of the struggle, was in line at a halt or on the march, each piece was followed by its *caisson*; and the carriages, under the orders of the quartermaster-sergeant, formed a third line, and followed five of the *caissons*, the spare horses following the sixth.

This was also the formation for the assembly. It had the advantage of being practical, for, when so formed, the captain could best supervise the whole of the battery, occupying as it did, a front of a hundred paces, and a depth of three carriages—a little less than a hundred paces.

The formation with full intervals is of course preferable to one with diminished intervals, because it is then more convenient to pass between and

around the carriages, but it sometimes happens that there is not sufficient room, and it then becomes necessary to form with closed intervals. This last formation can also be used in the field by the battery deployed in line.

All other formations for manœuvres and all the evolutions not necessary for passing from one of the formations named above to the other, should, in my opinion, be placed among those that are to be employed only in time of peace.

I recommend also that it should be required to practice, and in preference to all other exercises, long marches at a trot in column of pieces, or by the battery in line. For the horse artillery this last formation should also be practised at a gallop.

In long and rapid movements it is essential that there should be no excitement, but that the horses should be held well in hand and not be fatigued and harassed by sudden changes of gait. It is very difficult to bring this about, for, especially at the bends in the road, it seems almost impossible to preserve the distances. The pieces sway to and fro in turning, and all the warnings of the officers are given in vain, for they are unheard in the infernal noise made by the pieces and caissons.

It often happens in actual warfare that it is necessary to trot many miles in column of pieces. We must therefore in peace-times practice trotting the horses four or five miles without winding them. We must also practice forced marches of at least thirty miles per day, so that all the men may learn how to execute them without distressing the teams. By this means they will be able in war-time to traverse sixty miles when ordered to appear at any cost. It is much more important that the artillery should be able to do this, than that it should be able to execute the most elegant evolution upon the drill ground.

It is my opinion, I repeat, that the artillery, whenever it is possible, should fight in battalions, so that it be always employed in masses. I think, nevertheless, that manœuvres by battalions will rarely be possible in the field, and that they will never be necessary. I have already told you how the second battalion of foot artillery at Königgrätz endeavored, as it came upon the field, to manœuvre as a whole, and how its caissons were thereby prevented from following it, so that we suffered from a failure of ammunition at the most decisive moment of the battle.

In the greater number of cases the situation itself prevents these manœuvres. Four batteries can very well fight as a battalion, although not able to go into position in conformity with the prescriptions of the drill regulations for this evolution. Very often they will be separated by ravines, farms, etc. If the direction of the wind be such that it is necessary to form them in échelon, that alone would prevent their advancing as prescribed therein.

Consider that a battery on a war footing contains as many carriages and horses as a whole battalion on a peace footing, and you will comprehend the enormous difficulty that the chief will have to direct by the voice the very considerable mass formed by four batteries on a war footing. If the battalion marches at a rapid gait,—simply at a trot,—directing by the voice is out of the question by reason of the thundering rumble and rattle

of the wheels ; and even the trumpets are no more heard or, if heard, are more often misunderstood than not. It is then rarely possible that a battalion on the war footing could manœuvre together, and, when it is possible, it would none the less be wrong for it to do so.

The author of the pamphlet upon the management of artillery from which I have already quoted many times, says that the battalion chief should never bring his command into action in any other way than by giving his instructions to each of his battery commanders, or by sending them his orders by his aide. I agree with him perfectly. Ordinarily the battalion commander will himself lead one of his batteries into position, and will send orders to the others to guide themselves upon that one,—to come into position on its right or left.

You will perhaps object that, at Sedan, the second battalion of foot artillery of the Guard, of which I have spoken above, formed in column of platoons and passed in this formation behind the first battalion in order to reach its final position on its left. But this manœuvre was not executed at all as a manœuvre under the personal command of the battalion chief ; it was done simply according to the orders received, under the personal direction of Major von Krieger. Originally the battalion occupied a position where there was room for but three batteries, cut in two, besides, by a ravine. In conformity with dispositions that I had just announced, the battalion chief gave the order to limber to the front and wheel by platoon to the left into column with closed intervals. The battery on the right was separated from the others by a ravine, and was obliged to turn the head of this in order to rejoin the others. To the battery which had not been in action he gave the order to follow the column and then set off at the head of the column at a trot and directed it through the defile in the forest. When he crossed with it the exposed place where, marching by a flank 500 paces behind the first battalion, he was in danger of receiving the projectiles intended for that line, he gave himself the air of the manœuvre. He placed himself upon the front where the enemy's bullets were whistling, and addressed the leading battery as if he were upon the drill ground : "Hold the gait steadily." "Second platoon, observe the distance." "The driver of the swing team, fifth piece, should not gallop." "Chief of the sixth piece, you are too far forward." Finally he said to the battery commander, "Captain, it is time to go into battery. Align yourself on the first battalion." Then he brought the second battery through the dangerous space in the same way, and then the others.

He did not then execute a drill manœuvre as laid down for a battalion as a unit, but the batteries proceeded under orders given them toward the position assigned them, and they did not go there under the commands found in the drill regulations for the battalion commander.

You perhaps imagine that I am going to formulate a declaration that "The things that the artillery has no need to learn for use in war, are not necessary in time of peace."

In that case I would feel constrained to condemn all battalion manœuvres in peace-times. But this deduction would lead us to formulate a false conclusion.



The fact that the battery upon a war footing has as many horses and vehicles as a battalion upon a peace footing, furnishes of itself the plainest proof of the great difficulty with which such a mass could be conducted. It is even more easy to direct the peace battalion than the war battery, because the battalion commander has, in the captains and numerous officers, a greater number of assistants than the captain of a war battery can have.

Besides, as I have already said, the officers of higher rank than the generals or colonels commanding the artillery brigades,—the inspector, the inspector general, and the general commanding the army corps,—have not sufficient time to inspect each particular battery. They must judge them by their battalion evolutions, and for this reason there must be prescriptions regulating these evolutions. But it is my opinion that these manœuvres should be only the most simple ones.

There have been introduced into the drill regulations new and very complicated evolutions, which I think, have never been shown to be necessary either in war or in peace. The more simple the regulations, the more exactly can the evolutions they contain be learned.

Permit me to take up a little time with some of these evolutions. I will try to be as brief as possible, so as not to fatigue you with details.

As to the contents of the first part of the regulations, "School of the cannoneer, dismounted," I would neither suppress nor change anything, for it contains simply those parts of infantry drill which have been deemed necessary for the artillery.

I have noticed with the greatest pleasure that the second part, "Instruction of the cannoneer, with pieces not horsed," is edited in a manner short, precise and correct. I would like, however, to strike out Par. 84, for it should be placed in the third part, "Instruction of the cannoneer with pieces horsed." It treats of the manner in which the cannoneers of a horse battery should proceed when the pieces go off at a trot before they have mounted their horses. I have heretofore shown you what confusion would be produced if the attempt were made to execute this evolution in actual war,—this evolution which produces such a fine effect upon the drill ground. Furthermore, the regulations elaborated after the War of 1866 laid down that *all retrograde movements must be commenced at a walk*. This rule is embodied in the new regulations, but this Par. 84 contradicts it absolutely.

From what I have written you in my preceding letters you will foresee that it is in relation to the the third part, "Instruction of the cannoneers with pieces horsed," that I will have the most to say, and the greatest number of modifications to suggest.

In the second chapter of this part I find as a novelty the half-column.\* I do not believe it necessary. It has been borrowed from the drill regulations of the cavalry. For the cavalry this formation has been found useful for traversing long distances obliquely to the right or left. The men would be crowded and jammed together, and good order would be lost, if they were required to ride too long at a right or left oblique. But this inconvenience is not felt in the artillery, for with it, all obliques to the right or

\*The half-column is an échelon of platoons formed by a half wheel by platoons to the right or left.



left are executed by a half wheel of each carriage, which, after executing it, follows a straight line. From this results a sort of half column of pieces and the half column of platoons appears to be superfluous. As to the oblique march, we cannot do without it, but it differs so little from this half column, that I necessarily find the latter a useless complication.

If the half column were suppressed, many of the complicated evolutions in the third chapter of the second part would disappear. I cannot pass in silence the fact that some of the men highest in estimation (Rosenberg, for example) have declared the half column useless even for the cavalry. They say that it is a very difficult formation, and on that account absorbs too much of the time devoted to instruction.

In the third chapter of the second part, I find as formations newly adopted, the "battery-columns," and the "battalion-column."\* The two are borrowed from the cavalry drill, but I do not see the necessity for extending them to the artillery. It is asserted that the formation in battery-columns is better able to adapt itself to the terrain than the extended line is. But nothing is better able to do this than the battery line, for it does not form, as with the cavalry, a wall. On the contrary, it can, thanks to the intervals of 20 paces between pieces, easily pass the small obstacles in the terrain. A deployed artillery line can also pass with facility amongst other bodies of troops. I remember to have seen in action a brigade of cavalry, retiring before the enemy's fire, pass between the intervals of my batteries which were advancing at a trot.

But if a long line of artillery meets an obstacle of such extent that it can be crossed but at certain isolated points (a river, for example, or a wide ditch) then the line must break into column of pieces, either by single batteries or by the whole battalion (Dresky did this with the whole battalion at Vionville) and hence the battery-columns would be useless. Furthermore, the battery-columns offer to the enemy's fire a mark so deep that his projectiles will certainly take effect in it.

The battalion column, in which the batteries in column of platoons are placed side by side, is particularly applicable, it is said, to the formation on the place of assembly, for the reason that it is possible to move in all directions from this formation in the simplest way. (See Par. 196.)

Whoever agrees with me in my opinion that in war the battalion should never be conducted into action by the direct command of its chief, but simply battery by battery, each receiving the instructions and orders of the commandant, will also agree with me that it is hardly possible to imagine a case in which the whole mass of the battalion would suddenly be called into action in any one direction. It could take this formation only at a considerable distance from the field of action. It will have then, in order to reach it, to traverse a long distance, and, to make this march, it matters little whether the head of the column begins by executing a wheel, or whether the batteries on the flanks should form line from column of platoons by wheeling. Even during the manœuvres in peace it is not allowable to assemble the

\* "Battery-columns" is the name given a line of batteries, formed each in column of platoons, with intervals between batteries of 60 paces (100 paces when on a war footing). A "Battalion-column" is a similar formation with intervals reduced to 20 paces.

artillery too near the enemy, because it might become necessary to employ it suddenly against his flank. Besides, it is much more practical and natural to assemble artillery masses, when not too large, in close column of batteries rather than in the battalion column newly introduced. It is more practical, especially for the battery on a war footing, because then each captain can more easily see all his men and pieces. The battery, then, as I have already said, forms, when deployed in line with its caissons and wagons in two lines behind the pieces, a mass the depth of which is almost equal to its front. Hence its chief can watch over and command it from a single position.

In the battalion column on the other hand each battery forms a column of platoons, having a front of 20 paces and, with nine carriages, a depth of 180 paces. It is then much more difficult to oversee. It happens often that it remains for hours in one place (this happened with the Guard Corps on the morning of St. Privat, and during the battle of Beaumont) and the men become tired and it is necessary to keep a watch over them. It is at this time, too, that the details of the battery are inspected, and all irregularities in harnessing, in packing, etc., are remedied; and this is above all necessary when the march has begun before daylight, while the march of the previous day had not terminated until after dark. It is then essential that the captain should have everything well under his hand, and should not have far to go in making his inspection.

It is true that Par. 196, cited above, allows also the assembly to be in close column of batteries; but, in the whole of the third part of the regulations this formation is not mentioned. Here is, therefore, an omission.

The column of batteries is also a practical formation for the evolution of masses, not too large, when outside of the dangerous zone of fire. At the beginning of the battle of St. Privat, Scherbening took the whole of the corps artillery at a trot from Doncourt along the crest of the heights to a position beyond Anoux-la-Grange, in passing to the left of the first division of the Guard. He traversed thus more than 4000 yards. The batteries followed each other in battery front with caissons and carriages in two ranks behind the pieces. Only at the moment when he approached the zone where the enemy's shells were falling, did he form *échelons* and conduct the leading battery in person to the front, after having ordered the others to go into battery, each nearer to the enemy by 200 paces than the one which preceded it, and on its left.

I would propose also to take out of the regulations the deployment of a mass of artillery on its flank, for, as I have already said, it cannot well happen that a mass of artillery would have to deploy suddenly for action upon one of its flanks, immediately after having quitted the place of assembly. I would retain only that part of it by which the column of pieces is brought into action toward its flank, for this is often executed when a battery goes to occupy a position protected by cover.

In my opinion, therefore, the half-column, the battery-columns, and the battalion-column, should be left out of the drill regulations, and only the columns by sections, by platoons, and by battery front, should be retained.

Then, the regulations being much simplified, we can devote more time to the endeavor to execute these last with the greatest exactness. This would certainly cause the disappearance of many elegant manœuvres that give pleasure in the executing, though they are evolutions which can usefully be employed by the cavalry only.

I am, it is true, strongly in favor of having the artillery assimilated to the other arms, but nevertheless there seems to me to be a great mistake in causing the artillery to lose time with evolutions which are not needed for the accomplishment of the task proper for the arm.

I regret that Par. 106, 3d, of the third part of the regulations, was revised with reference only to the battery upon a peace footing, and that the dispositions concerning the battery upon a war footing, with caissons and wagons, have been placed in the 4th appendix. Not only this, but no mention is made in this place of the formation to be adopted for forced marches; neither are the places designated where, in the different cases, the carriages should march and post themselves when, for example, the battery is formed upon the place of assembly.

The 4th part of the drill regulations treats of the combat of the field-artillery. With the exception of the small number of points upon this subject which I have already mentioned, this part is absolutely perfect both as to contents and form. All artillery officers should be required to know it by heart, for it gives in brief and condensed form the most important principles in the employment of artillery, as they were deduced from the experience acquired in the last campaigns.

One excellent innovation is found in the appendices. The instructions contained therein have already been published under the form of special directions, and now the task of the instructor is simplified by finding the whole subject united in one book.

The sabre exercise in the first appendix is borrowed from the cavalry. It needs no comment.

The second appendix gives instructions concerning the management of the carriages, etc. For all time artillery officers who have had any special knowledge in this matter have been divided into two camps. The one were partisans of the curve of long radius in turning, and the other of the curve of short radius. These held that the radius should be eight paces, and those held that it should be two paces. During my long service we have passed, each ten years or so, from the one to the other of these views, according as the head of the army was a partisan of one side or the other.

The new regulations established as a principle that all changes of direction should be made with a radius of eight paces, the turn which the partially taught horses can execute most easily. But it also permits that, under particular circumstances, the short radius may be used, and even that the piece may turn on its own ground. It matters little to me which method is adopted. The only thing which seems to me to be of importance is, that we should not change the method too frequently. The same principles may then become firmly fixed in the mind of the instructor, whatever be his grade.

The third appendix relates to the evolutions of the detachments of the horse artillery without the pieces.

You will remember that it is my desire to see the "charge" entirely suppressed. I have heretofore given you the reasons in detail which seem to me to plead in favor of this suppression, and have no need to repeat them. The time and trouble devoted to them could be better employed in rendering the soldier more skillful in the sabre exercise on foot, on horseback, and man against man; for it is only for this combat that he will ever have occasion to draw the sabre, either during the march or in cantonment.

The fourth appendix contains the instructions concerning the direction of the carriages, either of the battery or of the battalion, and the method of renewing the supply of ammunition. They are based upon the experience acquired during the last campaigns, and I have very few modifications to propose. These relate, in the first place, to Par. 318.

The new sub-par. "a" indicates as the formation for ordinary marches that which, in 1870, was called the formation for the forced march. It was made use of always just at the moment when the battery moved to the front to go into action, for only then were the échelons formed. But the sub-par. "b" directs that whenever a march is begun which seems likely to terminate in an engagement, échelons should be formed. The second échelons are then, once for all, relegated to the rear of the marching column of the other arms.

In my opinion, cutting the battery into two parts too early, is wrong. I have given my reasons for this opinion in full in one of my preceding letters, and need not repeat them here. I would propose that the formation for the ordinary march should be retained until the battery receives the order to go into position, after which the échelons should be formed.

Par. 321 treats of the renewal of ammunition. I would propose that the renewal begin as soon as the expenditure begins, and that the battery commanders should endeavor to have, as far as possible, the limber chests of their pieces full. They should, whenever possible, draw directly from the caissons so as to empty them before touching the limber chests of the pieces.

As to the regulation that the renewal of the ammunition will begin, at the latest, before half the ammunition in the chests is consumed, I would like to see it disappear. It causes those captains who have never had field service to believe that there is no need to begin the renewal before that moment. But the renewal should be pressed whenever it is possible. It can never be known in advance whether the next following phase of the action may not produce a situation so critical as to prevent the renewal, and may, besides, require a great expenditure.

The fifth appendix completes the regulations in giving the rules for field artillery practice.

I have reserved for the last what I have to say upon the Fifth Part, which treats of the Grand Review. Not that I may have more to blame in that part. The manner in which the dispositions set forth there may be formulated, is utterly indifferent to me. The important thing is, that whatever is found there, should be observed with the most minute accuracy.

The Grand Review is particularly important for the artillery. It is a fact that no other arm is so greatly inclined to look upon it as an unimportant matter.

In the artillery, one of the cannoneers considers it his especial duty in action to sponge the piece; another, to pull the lanyard; another, to bring up the shell, etc. During the fight no man is aligned upon any other, and it is therefore the one arm which is too much inclined to consider the mechanical exactness of the review as a secondary thing—a useless play.

But the review is the best evidence of the discipline and obedience of the troops. It is impossible that the men should always devote the same attention, every day, to all regulations however minute. We are obliged ordinarily to close the eyes upon small irregularities. But the day of the review is the one on which the battery shows that it is in a state, and has the will, to execute all that is ordained in a fashion the most minute and exact. The more the character of the arm tends to relegate to the background the precision required in the review, the more the superior and general officers should consider them of importance, so as incessantly to recall to the troops the fact that the essential condition of existence resides, for an army, in the execution of all that is ordered, however minute this may be, in obedience and discipline.

In the last century our adversaries ridiculed the noon review at Potsdam. But it is with this minutely exact method that the discipline is born, thanks to which our army, led by Frederick the Great, vanquished enemies greatly superior in numbers. It is the noon review—called Potsdam—which created the Prussian army,—the German army, of which the latest successor has been the astonishment of the entire world.

This is why the artillery, if it wishes to remain the equal of the other arms, should attach great value to the Grand Review, and consider it as the expression and at the same time the touch-stone of discipline.

DRESDEN, September, 1884.

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## THE DECISIVE DAYS BEFORE LEIPSIC.

By CAPTAIN WALTER v. BREMEN.

NEBENETAT, PRUSSIAN GENERAL STAFF, INSTRUCTOR AT THE WAR ACADEMY.

Translated by Lieut. ALFRED S. FROST, 25th Infantry.

(By permission of the Author.)

[Continued from No. 51.]

THERE were certainly political reasons of the first importance which induced Napoleon to hold the Saxon capital; but, viewed from a purely military standpoint, as one must now look at the case, it cannot be regarded as an unpardonable error. But all the same, this left him weaker by 30,000 men for the impending battle against Blicher and the Northern army; he could, however, with the 140,000 men remaining at his disposal still count upon a superiority over these enemies; for

at that time he estimated Blücher's army at 60,000 men and the Northern army at about the same strength.\*

From the information brought in he did not apprehend an energetic advance of the Bohemian army. Nevertheless he felt the need of these 30,000 men at Leipsic; but he could not foresee this contingency, and for a concentration upon Leipsic he would be able to call upon this force later. Even should he win a victory over Blücher and the Northern army, which he regarded as a certainty,† the importance of Dresden was not to be undervalued; and it was safely to be assumed that, after the defeat of the armies in the north, that of Bohemia would make a hurried retreat.

On the side of the allies, meanwhile, the situation had altered as follows:

The Northern army, after its passage over the Elbe, remained until the 6th of October in the neighborhood of Dessau and Aken, and by the 7th of October the greater part of the force had advanced to the line Zörbig-Jessenitz, where it remained on the 8th.

On the 5th of October the Silesian army commenced its forward movement towards the Mulde, and its advanced troops had reached this stream at Düben; and there it awaited the completion of the bridge-head at Warthenburg.

On the 7th of October Blücher and the Crown Prince of Sweden agreed to assemble their armies next day, and then, on the 9th, to move upon Leipsic, where they only expected to find strong detachments of Napoleon's army.

Up to the 8th, the Bohemian army had slowly advanced to the line Chemnitz-Altenberg, and since the 4th they had been followed by only 25,000 men, the remainder being still to the southward of the mountains.

Single divisions of Bennigsen's corps began on this day to cross the mountains, and their advanced troops reached the line Liebstadt-Altenburg.

Up to the 8th the French troops opposing the Northern and Silesian armies had been withdrawn to the line Schilda-Eilenburg-Tancha, while those in the south had retired to the line Frohburg-Mittweida.

Napoleon, with the forces he had led from Dresden, arrived near Dahlen and Wurzen on the 8th; and on this day, as shown by Map II, stood with his 140,000 men so close to the 60,000 men of the Silesian army that the advanced troops at Eilenberg were in contact. A day's march in rear of the Silesian army were 40,000 men of the Northern army, which had left 30,000 men a day's march farther in rear at Dessau.

By a clever use of the advantages of interior lines the Emperor would have succeeded in bringing a superior force against a part of this enemy. If Blücher awaited the onset Napoleon's success was probable; and the sequel would be the retreat of the Crown Prince of Sweden over the Elbe. The Emperor was full of hope: "All goes well," he wrote on the evening

\*De Norvin's Portefeuille de 1813, II, 366. In a letter of the 9th of October (Corresp. xxvi, 20, 735) he estimates the Northern Army at 40,000 men. Perhaps he believed it very much reduced by the detachments protecting the bridge-heads and laying siege to Wittenberg.

†That Napoleon felt certain of a victory over Blücher may be gathered from the note to Darn before mentioned. It says: "Comme sur cent chances Sa Majesté croit en avoir quatre-vingts pour elle, il faut agir comme si elle devait réussir."



of the 8th to the King of Naples. He expected quite correctly to find the army of Silesia at Düben\* and gave orders that same evening directing the assembled forces to hold themselves in readiness to march upon Düben at 6 o'clock the next morning. That night he awaited the latest intelligence which ought to afford him certainty as to the enemy's position.

According to the usual custom the orders detailing the march were published soon after midnight.

At 6 o'clock in the morning the French troops advanced upon Düben by both banks of the Mulde. "I expect," wrote the Emperor about 9 o'clock to the King of Naples, "to attack General Blücher at Düben, where, I am assured, the Silesian army is in position. I hope to be in Wittenberg to-morrow to raise the siege of that place, and then to pass to the right bank of the Elbe and seize both of the enemy's bridges."†

But now the unexpected happened. Blücher avoided the battle. As already mentioned the Silesian and Northern armies had planned an advance upon Leipsic for the 9th; but intelligence brought to the headquarters of the Silesian army in the night of the 7th, made it certain that Napoleon was approaching from Dresden with a powerful force. And, as in an advance upon Leipsic they might expect to meet not alone a part, but, under certain circumstances, the entire strength of Napoleon, they therefore chose a movement, with a view to an eventual advance upon Napoleon, not towards the Elbe, but in a westerly direction retiring behind the Saale.‡ This measure made it necessary for the Silesian army to abandon its communications anew. Yet Blücher did not hesitate an instant to take this step, for he expected the Crown Prince to retreat behind the Elbe in any event.

At the same time that Napoleon put his columns in motion toward Düben, Blücher began his march to the right towards the Northern army at Jessnitz, arriving there with the corps of York and Langeron at 9 o'clock that night; while Sacken's Corps, nearly cut off by the advance of the French, only extricated itself from its perilous position by a night march upon an arc around the north of Düben.§

This incident shows how much more independent of its communications an army is in its own country than it can be in foreign territory. For a second time, and without great difficulty, the Silesian army changed its line of communications which no longer led over the bridges by which it had advanced, but along the left bank of the Elbe in front of the enemy's for-

\* On the night of the 9th of October, the Emperor was not correctly informed of the strength of the forces opposed to him; but towards morning he knew it to be about 60,000 men. However, he still supposed that the Crown Prince of Sweden was at Dessau with about 40,000 men.

† *Corresp.* xxvi, 20, 735. And in all the other dispatches of the Emperor, written on the morning of October 9th, he expresses the firm resolve to attack Blücher at Düben, and assurance of a victory.

‡ Blücher had proposed, in case the Emperor attacked him, to retreat behind the bridge-head at Wartenburg and that Bernadotte should then attack Napoleon's left flank. If Napoleon turned upon the Northern army, however, it should fall behind the bridge-head at Aken and Blücher would advance against Napoleon's right flank. Bernadotte declined this proposition and proposed a joint march behind the Saale instead.

§ Even Blücher's headquarters barely escaped capture as it did not break up until after the troops had left.—*Pertz Life of Gneisenau*, III, 439.



tress of Magdeburg, and then to the right bank by Ferchland west of Genthin.\*

Napoleon's contemplated stroke therefore failed of success. Not once had he been able to discover for a certainty the whereabouts of his enemy. He believed Sacken's Corps to be in retreat upon Wartenburg; nor was he sure of the direction taken by York and Langeron, though he believed they had turned towards Dessau.† For the 10th he ordered a reconnaissance towards Wartenburg and another in a northwesterly direction; he pushed an advanced guard on to Kemberg, and left the mass of his troops near Düben. He still hoped to encounter Blücher before Wittenberg. From Eilenburg, about 10 o'clock in the morning, he sent the Duke of Bassano at Wurzen, the following dispatch: "Inform Marshal Saint Cyr that my advanced party will be in Wittenberg to-day. That possibly to-morrow or day after there will be an engagement, and, this ended, I will turn back to him. That in any event I count upon his holding Dresden and if anything occurs to prevent his holding it, which I hope there will not, the Marshal Saint Cyr may retire upon Torgau by either bank. That, if it comes to a battle and I defeat the enemy, the Austrians will retreat over their frontier and I will approach Torgau by the right bank in order to place myself in communication with him and, after first relieving him, pay a visit to Berlin. If, on the contrary, there is no battle, it is possible that I may manœuvre on the right bank of the Elbe; because, all of the enemy's plans being based upon movements on the left bank, I will fall upon their line of operations."

So here is a return to the plan entertained in Dresden on the 6th of October, namely, to carry operations to the right bank of the river and in connection with this plan the design, so often proposed during this time, of an offensive against Berlin.

In the course of the afternoon the Emperor decided to adhere to this plan even if it became necessary for the King of Naples to retire before the Bohemian army, and to give up Leipsic. He would then retreat by Eilenburg and Düben on Torgau and Wittenberg.‡

While upon the 6th of October the Emperor only intended to take a part of his forces upon the right bank of the Elbe, he was now about to go there with his entire army, completely cutting loose from his communications with France. Although he controlled the fortresses of Torgau, Wittenburg and Magdeburg, and Davoust occupied Hamburg, though Küstrin

\* During these days only a small part of the baggage of the Silesian army fell into the hands of the enemy.

† "Langeron a quitté hier Düben, à quatre heures après midi, se dirigeant, à ce qu'il paraît, du côté de Dessau," wrote Napoleon at half-past three A. M., October 10th to Marmont. Napoleon was aware of the intention of the Silesian army to move in three columns upon Leipsic, as is shown in a letter to Ney. *Corresp.* xxvi, 20, 740.

‡ "Mon intention est, si le roi de Naples était obligé d'évacuer Leipsig, de repasser l'Elbe avec toute mon armée, en jetant l'armée de Silesie et de Berlin (thus he styled the Northern army) sur la rive droite et en prenant tout le temps de la détruire; ou si elle préfère abandonner ses ponts, de la laisser sur la rive gauche et de prendre ma ligne d'opération sur la rive droite, depuis Dresden jusqu'à Magdeburg.—Écrivez en chiffre au roi de Naples et au général Lauriston qu'à tout événement, s'ils évacuent Leipsig, leur retraite doit être sur Torgau et Wittenberg, et que les ponts de Düben et d'Eilenburg sont gardés; que s'ils étaient obligés d'évacuer Leipsig, mon intention est de passer sur la rive droite de l'Elbe." Düben, 10th October, 1813, 3 o'clock P. M. To the Duke of Bassano at Wurzen.

and Stettin were also in his hands, would he really dare think of cutting loose from his communications for a long period?

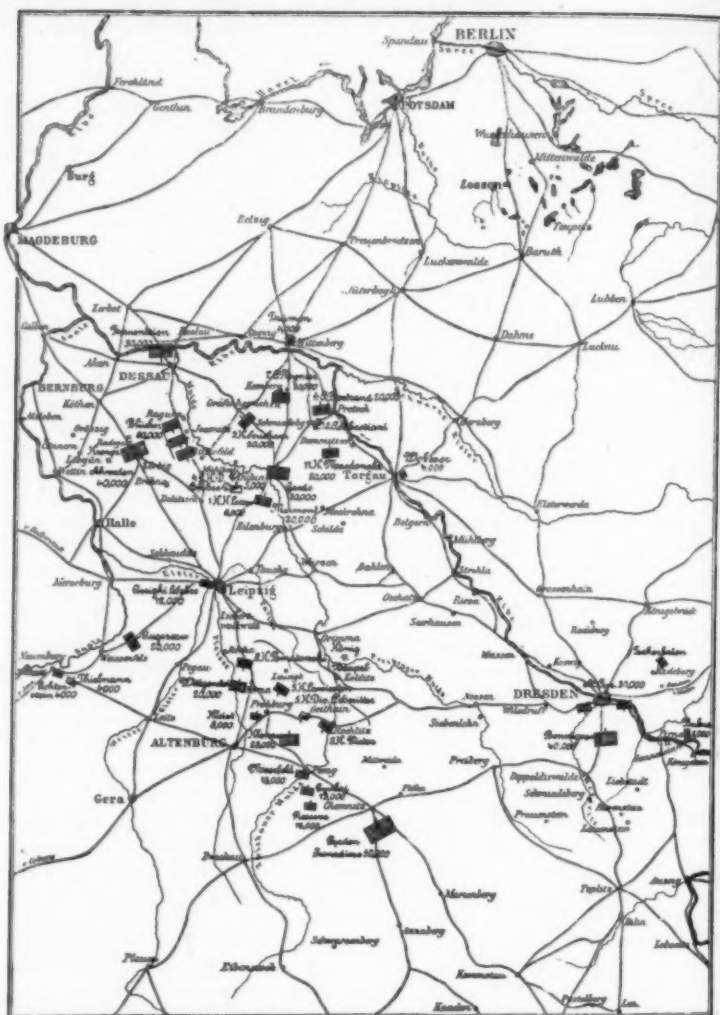
The opening of a new line of communications by the lower Elbe would be a dubious enterprise; and, meanwhile, how would he obtain the men, subsistence, clothing and ammunition to supply the great and ever increasing demands of his army? He had already expended much of his strength protecting convoys arriving from France. A compensating result was not to be expected from this plan so long as his enemies, without allowing themselves to be misled, quietly effected a junction in his rear.

In the first hours of the afternoon Napoleon arrived at Düben and took up quarters in the small castle there. Here he remained until the morning of the 14th, and those days were to decide his fate.

The most opposite opinions have been expressed concerning the activity he here displayed. The greater part are to the effect that he spent these days in inexplicable idleness and *ennui*. It will therefore repay the trouble of going deeper into this matter.

Most opinions are based upon the picture drawn by the Saxon Major von Odeleben, who was one of the imperial circle during this campaign. In his book, "Napoleon's Campaign in Saxony in the year 1813," he writes as follows: "The three days ending on the morning of the 14th, spent by Napoleon in this little water-surrounded castle, were probably the most tedious he had experienced for many a campaign. Neither military nor geographical subjects could arouse the least interest and his companions in their perplexity knew not what they could do to amuse his majesty. During that time I saw the Emperor while he impatiently awaited news from the Elbe. He was in his chamber wholly unoccupied and was seated on a sofa before a large table upon which lay a blank sheet of paper which he covered with great gothic characters such as one sees on birthday-letters. His geographer, D'Albe, and another co-worker, sat in a corner of the room idly awaiting his commands. Such moments of his life deserve mention because of their rarity." After reading this description one is apt to think that during these three days the Emperor did as good as nothing; but now we will compare the reality. In these three days he published not less than 59 orders. These occupy in the printed edition of his correspondence no less than 38 pages. When one realizes the time required to think upon and dictate them, and considers further that the Emperor had many and lengthy interviews with different marshals, he will undoubtedly conclude that our author here lacked his usual acumen. After this there is nothing to be said of *ennui*, and as to the charge of idleness we can safely allow the Emperor to speak for himself. Whether his plans were really suited to the situation and whether in their execution he showed his old-time energy is quite another matter.

On the afternoon of the 10th the Emperor learned that Sacken also had crossed the Mulde; he now knew that the entire Silesian army had withdrawn to the left bank of that stream but he believed it to be in full retreat upon Dessau. In reality, however, as shown by Map III, the greatest part of the Northern as well as the Silesian army, total 100,000 men, was assembled in the space Zörbig-Jessnitz-Raguhn-Radegast; while at Dessau was



only the corps of Tanentzien, 30,000 strong. Napoleon confronted these masses with 140,000 men grouped about Düben.

In the south the King of Naples was slowly retiring before the Bohemian army in the line Rötha-Rochlitz. The latter now occupied the line Chemnitz-Frohburg with 140,000 men. Napoleon was not acquainted with the strength of this army and estimated it at 80,000 men at the most.\*

\* "Si vous n'avez contre vous que Wittgenstein et Kleist, je ne suppose pas que cela puisse faire

Bennigsen, with the greater part of his force, about 40,000 men, had arrived before Dresden, which was occupied by Saint-Cyr with 30,000 men. Marshal Augereau approached Leipsic so that Napoleon had at least 250,000 men at his disposal.

While the Emperor was planning to carry on operations upon the right bank of the Elbe, there arose in his mind the thought that, after delivering a blow against the Northern and Silesian armies, he would move with all his forces upon Leipsic.†

But he still held fast to the hope of meeting Blücher and the Northern army; and, full of confidence, he wrote to the King of Naples on the afternoon of the 10th: "In the course of the coming day (the 11th) I will either have swept away the enemy or destroyed his bridges and thrown him across the Elbe."‡

His assumption was, therefore, as has been mentioned, that the main body of the enemy was at Dessau. Accordingly on the 11th of October, at 3 o'clock A. M., he gave orders for the 4th, 11th and 7th Corps, also the 2d Cavalry Division—altogether 65,000 men—to break camp at 6 o'clock A. M. and march in the direction of Wittenberg. The 7th Corps and the 2d Cavalry Division were to pass at once to the right bank of the Elbe; the 4th Corps was first to move upon Wartenberg to break up the bridge of boats which had been constructed by the Silesian army, and then on Wittenberg; the 11th Corps also to advance upon Wittenberg. Meanwhile Ney, with the 3d and 6th Corps, was to remain at Gräfenhaynchen and Düben in order to watch the roads leading to Dessau, Raguhn, Jessnitz, and Mühlbeck; cavalry were to advance upon Delitzsch and Bitterfeld. The Emperor himself was to move to Kemberg with the Guard and the 1st Cavalry Corps.§

A glance at Map III will show that in a certain sense the movements ordered by Napoleon could only lead to a stroke in the air: for the main body of the enemy was not where they sought to find it, but was already on their left flank.

And here the question arises: Was it the Emperor's fault that he was so poorly informed concerning the enemy's movements, or were his subordinates lacking in their duty?

Since the 7th of October the advanced troops of the Northern army had occupied Delitzsch and Bitterfeld. The Emperor was informed on the 9th that advanced troops of the enemy had shown themselves at Delitzsch, and he had sent General Lefebvre-Desnouettes there early on the 10th.]

He also notified Marshal Marmont, who arrived at Düben on the 10th,

50,000 hommes; s'il y avait de plus le corps de Klenau ce la ferait tout au plus 80,000 hommes," he wrote at half-past five in the afternoon of October 10 to the King of Naples. *Corresp.* xxvi, 20,754.

† With the opinion expressed by York that Napoleon began to execute this thought on the evening of the 10th because Marmont stood before Düben upon the left bank of the Mulde, I cannot agree. Napoleon only did this because Düben and vicinity was overcrowded with troops. This can be understood from the order for the 11th directing Marmont to pass Düben. "Aussitôt que sera désencombré." *Corresp.* xxvi, 20,760.

‡ *Corresp.* xxvi, 20,760.

§ Order to Berthier. *Corresp.* xxvi, 20,758.

] *Corresp.* xxvi, 20,736.

that especial pains must be taken to discover the meaning of the enemy's movements in Delitzsch.\*

This reconnaissance was not so thoroughly executed as it should have been; for, on the 10th, it only lightly touched upon the Prussian and Swedish advanced troops west of the Mulde. Therefore we are justified in saying that the French cavalry failed to do its duty. From the information which reached Napoleon on the evening of the 10th, he must have held the opinion that the Northern and Silesian armies were at Dessau.

In spite of the meagreness of this information it did not escape his penetrating glance that his enemies might have designs upon his communications; for, on the afternoon of the 10th, he wrote to Reynier: "Everything tends to support the theory that the Berlin army (thus Napoleon styled the Northern army) has moved towards the Saale, which accords with the movement out of Zwickau" (of the Bohemian army).†

In order to make certain of this, he ordered Marmont to take 4000 to 5000 men of all arms before daybreak on the 11th and march on Bitterfeld; to drive out the enemy there and find out positively what had happened in Jessnitz.‡

As however the news brought in up to the evening of the 10th led him to believe that the greater part of the enemy's force was at Dessau, one must acquiesce in the movements he began on the 11th with the view of crossing the Elbe and moving down the right bank upon his enemies' communications. He had reason to hope that this would cause them to retreat over the river and possibly to fight a battle without forcing him to attack their bridge heads in front. But it is otherwise when we consider what Napoleon would have done had he known that besides the Silesian army the greater part of the Northern army also was on his left flank. There can be no doubt that he would have taken the troops at Düben, crossed the Mulde upon the 11th, and advanced against the enemy in a westerly direction.

If the enemy accepted battle the superior numbers of Napoleon made the victory tolerably certain; should they retire over the Saale a strategical victory would be won all the same. He could then with his united forces turn toward the south and attack the Bohemian army with superior numbers.

The issue of the campaign would then have been very different; and it is not too much to assume that Napoleon's failure to employ his troops upon the right side was mostly due to the imperfect reconnoitring.

While his columns were moving upon Wittenberg on the 11th the Northern and Silesian armies, on the morning of the same day, began their march in a westerly direction towards the Saale, according to their decision of the 8th. It must be noted that the firmness of Blücher is alone to be thanked that this plan was not departed from. The Crown-Prince of Sweden showed the greatest inclination to turn back to his bridges at Aken and Rosslau and thus do the very thing Napoleon so much desired. He now undertook the march to the Saale only upon condition that the

\*Corresp. xxvi, 20,741.

†Corresp. xxvi, 20,750.

‡Corresp. xxvi, 20,760.

Silesian army, which after the passage of the Mulde became the left wing, would place itself on the right upon reaching the Saale; alleging as sufficient reason therefor that he would then always remain near enough to his bridges to be able to retreat upon them should the necessity arise. Although this shifting of the armies made the crossing of columns and vexatious interruptions, especially in the movement of the trains, unavoidable, yet Blücher acquiesced.

The Northern army crossed the Saale at Alsleben, the Silesian army at Halle; and both took position on the left bank.

The detachments sent by Napoleon to reconnoitre Bitterfeld and Jessnitz found those places evacuated by the allies.\*

Meanwhile, the 7th French Corps passed the Elbe at Wittenberg and threw the Prussian brigade Thümen back upon Caswig. The 4th and 11th corps, the Guard and the 2d Cavalry Corps marched in the neighborhood of Wittenberg; while the 3d Corps remained at Gräfenhaynchen and the greater part of the 6th Corps at Düben.

During the morning of the 11th of October Napoleon remained in uncertainty as to the whereabouts of the Northern and Silesian armies. About noon he ordered Reynier to make an incursion against Dessau to gain further information concerning the enemy posted there,—“Is it his intention to fall back over the Elbe and deliver battle or does he intend to break up his bridges and remain on the left bank?”† At midday he learned through spies that Dessau was but weakly garrisoned and that the enemy had retired upon Radegast and Köthen.‡

That evening Marmont returned from his reconnaissance, and reported that he had gained sure information that the combined armies were upon the left bank of the Elbe. But it may well be doubted whether his report had that significance. It may also be assumed that he touched upon the Silesian army only, and that afterwards, in order to display his own ability and insight in a favorable light, he made it appear differently;§ for Napoleon, in all his orders, published after the receipt of Marmont's report, always alludes to Blücher as having turned towards the Saale,|| while he refers to the Northern army as having retreated to the right bank of the Elbe.¶ In this persuasion Napoleon, on the 12th, ordered Reynier to move from Wittenberg down the right bank of the Elbe towards Rosslau and Ney to move down the left bank towards Dessau. Marmont was ordered to take position at Delitzsch and, in case the Silesian army moved from Halle on Leipsic, to strike it on the left flank.

\* “L'ennemi avait beaucoup de monde à Jessnitz il n'y a plus personne ce matin,” wrote the Emperor to Ney on the 11th. Corresp. xxvi, 20,761.

† Corresp. xxvi, 20,673.

‡ Corresp. xxvi, 20,764.

§ Marmont says: “Toute l'armée ennemie.” That by this he meant the Silesian and Northern armies we infer from the assertion that he advised Napoleon to attack “Blücher et le prince royal de Suède” immediately. Indeed, it is certain that Napoleon would not have hesitated an instant to do this had Marmont's information been to that effect.

|| Tous les renseignements que je puis avoir disent que dans la journée du 10.—le général Blücher s'est dirigé sur Halle. Düben, 12th Oct., 3 A. M. Corresp. xxvi, 20,765.

¶ “Il paraît que l'armée de Berlin (*i. e.*, the Northern army) s'est portée sur la rive droite.” Düben, 12th Oct., 3. P. M. And, “On m'assure que prince royal et tout l'armée de Berlin ont passé sur la rive droite.” Düben, 12th Oct. Corresp. xxvi, 20,775 and 20,776.



The King of Naples, whose troops with those already in Leipsic numbered about 70,000, was to take up position south of that city.

From Napoleon's point of view these measures cannot be blamed. It was his belief that should he succeed in seizing the bridges at Rosslau and Aken, the Northern army for one thing would not again appear upon the left bank. These movements on Dessau and Rosslau really caused Tanentzien's corps, which was there posted, in the belief that Berlin was threatened, to begin a hurried retreat by Zerbst in the direction of Potsdam. The information of this hasty retreat received by Napoleon must have confirmed his belief that the entire Northern army was retreating and that only the Silesian army remained upon the Saale.\*

But there was one move Napoleon might have made and did not; which was to bring up Saint-Cyr from Dresden; for the Emperor could no longer doubt that within the next few days he would fight a decisive action against the Silesian and Bohemian armies at least. Already on the morning of the 12th he had signified his intention of fighting a battle there with all available strength.†

While it is easy to see that, in the concentration against the Silesian army begun on the 7th, Napoleon did not give up Dresden because he believed he could bring an overwhelming force to bear upon Blücher without the aid of the forces there, it must have been extremely doubtful whether he would be superior to the Silesian and Bohemian armies combined.

The bringing up of the Dresden troops was, therefore, imperative; and it was still easy of execution. The order could easily have been delivered on the 12th; the road on the right bank from Dresden to Meissen was still open, and, by using the strong bridges at Meissen, the troops could have been brought upon Wurzen. If, to deceive the enemy, Saint-Cyr had marched on the night of the 13th, he could have entered Leipsic on the evening of the 16th and taken part in the decisive action; should this end in the Emperor's favor, the reoccupation of Dresden was assured.

On the evening of the 12th the situation was as follows:

In the north, Napoleon had assembled 70,000 men on both banks of the Elbe, about Wittenberg and Dessau. Opposed to him was Tanentzien at Zerbst.

On the 12th the Northern and Silesian armies remained on the left bank of the Saale in the position they had taken up on the 11th; their advanced troops remained on the right bank.

In and to the south of Leipsic, the King of Naples with 70,000 men opposed the first line of the Bohemian army, 80,000 strong. A few miles to the south 50,000 more of the last-named army had been assembled. Since the 10th the situation in and around Dresden had not changed. Between the troops on the Elbe and those at Leipsic the Emperor had 30,000 men about Düben and Delitzsch.

\* "Toutes les probabilités sont que l'armée de Berlin tout entière a passé sur la rive droite, aux ponts de Dessau et surtout à Aken," wrote Napoleon at midnight on the 12th. A half-hour later, after the receipt of the news from Ney, he wrote: "Il n'y a donc plus de doute que toute l'armée de Berlin a repassé sur la rive droite." *Corresp.* xxvi, 20,782 and 20,783.

† *Corresp.* xxvi, 20,771.



From this disposition of the active forces, it is apparent that, should the Bohemian, Northern and Silesian armies combine at Leipsic, it was no longer possible for Napoleon to meet them with superior strength. The allies had in this case over 230,000 men after leaving Bennigsen before Dresden; Napoleon, however, only marshalled about 190,000 men to oppose them. Had he, on the morning of the 12th, decided to bring up Saint-Cyr, his numbers would have been swelled to 220,000 men, a force nearly equal to that opposing him. Then throwing the Emperor's military talent into the scale, it was quite possible that the issue would be in his favor.

Meanwhile, as we know, the real situation was unknown to Napoleon, as he believed the Northern army to be on the right bank of the Elbe. From this standpoint his further actions also must be judged.

News received from Ney during the night strengthened the Emperor in this view, *i. e.*, that the entire Northern army had crossed to the right bank and was hurriedly marching upon Berlin. It therefore seemed sufficient to leave Reynier to conduct the further operations against Aken. Ney was to support the latter by a diversion upon the left bank\*; Macdonald was to remain at Wittenberg and become engaged upon the right bank only in case it was absolutely necessary†; otherwise he was to march upon Düben. The other troops upon the Elbe and Mulde were ordered to march upon Leipsic forthwith; "for," wrote the Emperor at 5 A. M., the 13th, "there will undoubtedly be a great battle at Leipsic."‡ So too Reynier, when he had taken the bridge at Aken, was to march by Wittenberg and Düben on Leipsic.§

Here he would make a stand; but in case the King of Naples found it impossible to hold his position at Leipsic until early in the morning of the 14th, he would take position upon the right bank of the Mulde, between Wurzen and Düben, and there await the attack of the allies. The night before the 13th word came from the King of Naples that he would be able to hold Leipsic the 13th.

Thereupon, on the 13th, nearly all of Napoleon's forces were directed upon Leipsic.

The decision to concentrate upon this point was in no sense the desperate move so many regard it; for, here also, Napoleon might still hope to exceed the enemy in numbers, as he still believed the Northern army far distant, beyond the Elbe.¶

In order to give his army an especial preponderance in this battle, his creative genius invented a new method,—the formation of his entire infantry in two ranks. "Insert in the army order"—he wrote to Berthier on

\* "Il paraît que le général Reynier marche demain sur Aken; faites diversion en sa faveur par la rive gauche." Napoleon wrote early on the 13th to Ney.

† "N'engagez votre corps d'armée sur la rive droite que dans le cas où ce serait indispensable. Si vous prévoyez ne pas être indispensable au général Reynier, il faut vous reporter sur Düben avec le général Sebastiani." Corresp. xxvi, 20,790.

‡ Corresp. xxvi, 20,789.

§ "Le général Reynier reviendra sur Wittenberg, son opération faite, pour se porter également sur Leipsic, où je crois que nous allons avoir une bataille générale." Corresp. xxvi, 20,790.

¶ Upon the information furnished by the King of Naples, Napoleon estimated the strength of the allies approaching from the south at only 60,000 men. Corresp. xxvi, 20,776.

the 13th\*—"that the Emperor orders that from this day forth the whole infantry of the army will be formed in battalions of two instead of three ranks, as his majesty regards the fire and the bayonets of the third rank as ineffective. If the battalions are disposed in close column of divisions, this formation gives six ranks and three firing lines, which is sufficient, and moreover contains the advantage that the battalion possesses a front one-third longer. This formation has the further advantage that, as it is made the evening before a battle, the enemy not being advised thereof will estimate the army opposed to him a third greater than it really is." Thus amid the thunders of the Battle of Nations struck the birth-hour of a new tactics.

After this account of how Napoleon matured his plans for battle, it can no longer be doubted that he merely followed the information he had received concerning the numbers and position of his enemy. Later, after the battle had terminated fatally, Napoleon himself, to avoid admitting that he had been deceived as to the strength and position of the enemy, sought to make it appear that he had been influenced by other reasons.

Thus in his Saint Helena memoirs the desertion of Bavaria is given a leading place among the causes which led him to abandon his plan of operating on the right bank of the Elbe and turn back upon Leipsic.† But in all his correspondence of this day there cannot be found the slightest intimation that he knew of the arrangement of the 8th of October between the allies and Bavaria at Ried. Although this latter circumstance would alone suffice to show the untenability of his later assertions, they are further opposed by the fact that on the 14th he intrusted to his Bavarian troops under General Durrien the guarding of Eilenburg, the importance of which he had previously pointed out and where were all the wagons of his headquarters.‡ He certainly would not have done this if he had already been advised of the disaffection of Bavaria.

Occasional defenders of Napoleon also assert, that he only followed the most pressing representations of his marshals when he gave up operations upon the right bank of the Elbe.§ The orders we have quoted, however, prove that this was not the case; but that, very naturally, he decided according to the information on hand.

That Napoleon was very near the accomplishment of his purpose, namely, by advancing upon the right bank to draw a great part of his enemy over the Elbe, and thus to delay the decision, is proved by the course

\*Corresp. xxvi, 20,793.

†Mémorial de Saint-Hélène, VI., page 70. Also Fain manuscrit de 1813, II., 374, labors to show that the disaffection of Bavaria was a ground for the Emperor's change of plan. Although Pertz, *Life of Gneisenau*, III., 447, sees all doubts removed because Napoleon gave this reason to Sir Niel Campbell, the English Colonel, on the Island of Elba, we can reply that this is no more a proof than his later utterances at Saint Helena. He had a strong interest in misrepresenting it; and these assertions should suffice to prove the contrary. What the Emperor says in his bulletin published October 30th, but ante-dated the 15th (Corresp. xxvi, 20,813) is written carelessly and has no value as evidence. The Emperor apparently received the first news of the action of Bavaria on the 16th through the Austrian General Count Meerfeldt who was captured on this day.

‡Corresp. xxvi, 20,799 and 20,804.

§Fain, manuscrit, II., 376, advances this theory. For the particulars of this pretended pressure upon the Emperor at Beltzke, compare *Geschichte der Befreiungs-Kriege*, II., 495.

of events in the Northern and Silesian armies on the 13th and 14th of October.

On the 13th the Silesian army sent a strong reconnaissance in the direction of Leipsic, which ascertained that it was occupied by large masses of the French; and from other sources it was learned that considerable bodies of French troops were still near Dübén. Otherwise Blücher remained in position at Halle, determined to march upon Leipsic as soon as he received news of the advance of the main army.

Great was his astonishment when upon this day he received a despatch from the Crown Prince of Sweden announcing his intention to retire immediately upon the right bank of the Elbe. It closed with a demand, bordering close upon an order, that the Silesian army should cover the movement.\*

Thus we see that the operations of Napoleon against Dessau and Aken had not failed of effect. Indeed, upon hearing of the advance of the French upon the right bank of the Elbe, the Crown Prince crossed the Saale with his army on the 13th and marched as far as Cöthen; he would have crossed the Elbe also if the bridge of Aken had not been destroyed after the retreat of Tanentzien. To replace the same he, without Blücher's knowledge, took the pontoon train and accompanying military stores of the Silesian army which he met upon the road.

Blücher was greatly enraged but did not hesitate an instant in his attempt to unite with the Bohemian army. He immediately acquainted the Crown Prince with this decision, and gave notice to the commander of the pontoon train that he had departed from the prescribed march without his order.

Early on the 14th his cavalry brought in information, which left no room for doubt, that the French forces were uniting at Leipsic. Word was received from the Bohemian army that it would attack Leipsic on the 16th and depended on the co-operation of the Silesian and Northern armies. Blücher immediately transmitted this to the Crown Prince of Sweden and coupled with it the request that he would move upon Leipsic by Bitterfeld according to Schwarzenberg's dispositions.

But Bernadotte was not easily persuaded to give up his plan of passing to the right bank of the Elbe, though he yielded so far to the urgent remonstrances of the commissioner of the allies attached to his headquarters, and especially to those of the English General Stewart, as to call a council of war which favored marching upon Leipsic.

Charles John now gave in; but instead of moving directly upon Leipsic, he so directed his march that he took no part in the bloody battle of the Silesian army on the 16th, and it was only belated and driven by necessity that he came up on the 18th.

Napoleon's advance upon the right bank of the Elbe lacked little, therefore, of being crowned with success; and it surely would have been had any general but Blücher been at the head of the Silesian army.

Then Napoleon with superior strength would have met the Bohemian

\* In order to give this demand greater weight, the Crown Prince pretended to have received a communication from the Emperor of Russia which placed the Silesian army under his orders.

army in a decisive battle and the issue of the campaign would have been otherwise.

After reviewing this period in its entirety it must be acknowledged that Napoleon tried to make an energetic use of the advantage afforded by his position upon interior lines.

So soon as he knew with certainty that the passage at Wartenburg was more than an empty demonstration, he assembled 140,000 men upon the middle Mulde within three days; fully determined to bring on a decisive action with the northern group of his enemies.

As he moved with these forces to the attack, the enemy withdrew in a direction which could not have been foreseen by Napoleon. From this point his movements became uncertain. He immediately moved in the direction of the supposed retreat of the enemy. He struck, however, only a proportionately small part of the forces opposed to him. The information brought in led him to believe this was a substantial part of those forces so that he might still hope to be equal to the Bohemian army advancing upon Leipsic even should it be joined by the Silesian army; and he had good reason to hope that the entire Bohemian army was not advancing upon Leipsic since the King of Naples had succeeded in arresting its advance during eight whole days; at first with only 40,000 men, afterwards with 70,000. Then, too, the junction at Leipsic was effected with surprising celerity.

When one considers the extraordinary exertion Napoleon obtained from his troops during these eight days, roads and weather being unusually bad, —the 11th corps marched 108 miles in these eight days—and further considers that Napoleon, besides the orders for the troops, published a multitude of orders about supplies and other administration matters, one can only admire the energy displayed by him during this period.

The only blame falling upon him is his neglect to withdraw the garrison of Dresden, and that he, contrary to his own principles, did not assemble his entire force for the decisive encounter. Nevertheless, he would have succeeded in keeping an important part of his enemy far from the battlefield, and thereby have caused a different result, had Blücher not been among the leaders of the allies. It was only because this general refused to swerve from his purpose of uniting with the Bohemian army for an advance upon Leipsic, that the Silesian army was brought up on time, and the Northern army was arrested in the beginning of its intended retreat.

That this campaign resulted happily for us we have above all to be thankful that the strong individuality of the Emperor found itself opposed by a character no less strong in the person of Blücher; and from this we can draw the lesson that success in war will most often fall to him who can adhere with unyielding firmness to the decision he has once recognized as correct.

#### CORRIGENDA.

*New German Rifle*, JOURNAL No. 51.

Page 586, first line, read *tactical* instead of *technical*.

Page 587, 16th line, "from rear to front pockets" instead of "from front to rear."

*Decisive Days Before Leipsic*, JOURNAL No. 51.

Page 621, 7th line from bottom, communications instead of communication.

Page 624, line 23, *Klenau* instead of *Klenan*.

Page 625, line 14, armies instead of armes.

Page 627, foot-note, † 2d line, *Klenau* instead of *Klenan*.

Page 630, foot-note, ‖ 6th line, *Count Daru* instead of *Count Dam*.

## THE DEVELOPMENT OF FIELD ARTILLERY MATERIAL.

(From *Engineering*, London.)

A PAPER on the above subject was read recently by Lieutenant-Colonel Walford, R. A., before the Royal United Service Institution.\*

The paper begins with a brief and excellent historical retrospect of the subject extending back to the days of the Franco-German War; which, it is at times difficult to realize, took place over twenty years ago. Twenty years, as Colonel Walford points out, is a very long time, and the world moves now so rapidly in the matter of engineering practice—perhaps more especially military engineering practice—that lessons learned at that distance of time may have become more than antiquated. Owing to the vast historical importance of that struggle between the two great military powers of the world, we are apt to consider its lessons as embodying all that is essential in tactics and strategy. It has grown to be considered as an absolute standard, any divergence from which requires explanation, if not excuse. There is much danger that its name may become a fetish. This is especially true of material, since opportunities for the practical study of tactics occur only at intervals, whilst the progress of material is unceasing, depending, as it does, on the march of science. Colonel Walford illustrates these facts by one striking instance, so palpable that it appears almost a commonplace. This is the substitution of steel for iron in the construction of war material. Such guns and armor as we now have were impossible, he says, in 1870, and will in their turn be obsolete twenty years hence. "Neither invention nor enterprise will stand still; woe to us if we do not advance with them."

These advances naturally influence tactics also, instances of which are given in the changes wrought by the increase of the proportion of musketeers to pikemen; the invention of the bayonet (which caused the abolition of the pike); the more rapid rate of loading due to the successive invention of the bandolier, the flint lock, the iron ramrod, the cartridge, the percussion lock, and the breech-loader. The effect of their direct successor, the magazine rifle, is one of the questions of which we anxiously await the solution from the next great war.

The leading features in the progress of artillery since 1870 are also traced in the paper. In the Franco-German war, the German army—with the ex-

\* Published in the R. U. S. I. Journal for April, No. 158.

ception of the Bavarians, who had a very inferior shrapnel—possessed but one projectile, the common shell, and but one fuse, a percussion fuse; while the French, who had, it is true, a shrapnel in addition to the common shell, had for the majority of those projectiles a time fuse, which was so absurdly constructed that it would act only at two ranges, 1500 and 3000 metres. If, therefore, the enemy happened to be at any other distance, the shell became practically solid shot. We need scarcely wonder, the author continues, that the loss of Germans from the fire of French artillery was so small. Our readers will see how great have been the advances made since those days, and how fully Colonel Walford is justified in the moral he draws as to depending too much on the lessons taught by the details of the Franco-Prussian war. The subsequent improvement of field artillery is further illustrated by the following facts: The shell used by the Germans in 1870 gave about 30 or 40 splinters at its burst, while their present ring shell gives 150 to 180 splinters, and their shrapnel discharge 262 bullets. The latter projectile is fitted with an admirable time fuse, which acts with great regularity at all ranges up to 3500 yards.

The author gives a list of the existing armament of field guns of the principal European nations; for the details of which we must refer our readers to the proceedings of the Institution. It may be stated, however, that Austria and Italy have adopted hardened cast bronze as a material, whilst other countries use steel.

The diversity of guns is remarkable, the weight of shell varying from 9.4 lbs. of the Italian light gun to 27.5 lbs. of the Russian heavy field-battery gun, while the muzzle velocity varies from 1223 f. s. in the last-named gun to 1720 f. s. of the English 12 pr. Great Britain has but one gun, of 3 in. calibre, with a common shell of 12.5 lb. This wide divergence of types the author attributes to the fact that most are really obsolete, our own not being included in the number. The adoption of a new pattern would, it is said, probably be the signal for an entire renewal of the field artillery of the world; and such a renewal—which is already foreshadowed in the case of France—will probably take place as soon as smokeless powder has been definitely adopted. With regard to signs of the future the author anticipates the possible adoption—in imitation of the infantry rifle—of a small calibre, a shell of great length, and a high muzzle velocity. A shell of small section, even if of forged steel, must be of considerable strength and thickness in order to resist the action of the pressure needed to generate a high velocity. Even if of so great a length as 6 calibres it will have but a small capacity, a defect which may be made good, in common shell, by the use of a high explosive, but with shrapnel, which the author considers likely to be the chief projectile of field artillery, this would not apply. A rapid twist of rifling will be necessary, and this will probably injuriously affect the accuracy and length of life of the gun. High muzzle velocity will be needed to give the requisite rotation. After referring to the effect of flat trajectory—which the author does not think is so desirable as is sometimes considered in the case of shrapnel—the paper goes on to say that the direction in which the progress of field artillery appears to show a tendency to move, is an erroneous one, and that a return will be made to the principle that the main



object of artillery is not to hit a given mark with unerring accuracy, but to obtain the greatest possible effect from its shrapnel, a condition which is incompatible with a small calibre, even though the shell be lengthened, *while it is not facilitated, and is perhaps even rendered more difficult of fulfillment, by a high muzzle velocity.*

The paper next deals with the question of quick-firing guns, upon which subject we have not space to do more than quote the following passage : "As a matter of fact the rate of fire of artillery in the field is governed by the time required to run up and lay a gun, together with that necessary for bringing up the ammunition. The operations of opening and closing the breech, and of putting in the shot and cartridge, can be performed as quickly as is needed with any breech-loading gun. In conclusion it may be said, therefore, that with respect to rapidity of fire no advantage would be gained by the introduction of quick-firing guns for field artillery, except with regard to the fire of case." The author acknowledges, however, that no disadvantage would attend their use, except that due to the extra weight of a metal cartridge, which may amount to 16 per cent.

After some favorable remarks on mortars and howitzers—the objection lying in want of mobility—and a brief reference to gun-carriages, the question of ammunition is dealt with at length.

Armored defenses in the field have been generally rejected owing to the increase in weight they entail, but the desire for invulnerability is, as the author says, "a sign of the times." The Gruson travelling shielded mounting was tried at the German manœuvres of 1889 and was exhibited to a gathering of officers of all nations, held at Magdeburg, in September last. It consists of a sheet-iron cylinder, which is provided with a floor and a revolving curved roof, and has a door at the rear. The weight of the gun, which is without recoil, and that of the roof, are taken on a central column, and do not fall on the thin iron sides. The system rests on four small rollers, which are used to place the mounting in position, while the transport of the whole is rendered comparatively easy by the use of an axle carrying two wheels. It is considered that the whole can be drawn by three horses, the driver sitting on the cupola itself. These mountings are made for three sizes, and the loads for each horse in the three cases are respectively 13.3 cwt., 23 cwt., and 22.3 cwt. These mountings could therefore travel only on roads, and are not, in the true sense of the word, field artillery mountings. It is intended that they shall be buried in the ground in such a manner that the roof and the gun are alone visible, and it is anticipated that they will thus be safe from injury owing both to their invisibility and to the shape of their curved roof. Their small area will render it extremely difficult to hit them with high angle fire. These claims, the author says, are doubtless well grounded. On the other hand, the guns used in the mountings are so small that it is doubtful whether they would be of much value in the work for which they are intended. The author questions whether the protection given by the mountings might not be better employed in covering machine guns, which, remaining invisible during the artillery struggle, would be available for use when the infantry attacks developed, and would be entirely invulnerable to infantry fire.



Of late years there has been, as Colonel Walford points out *an enormous increase in the proportion of guns to infantry in the French and German armies*, and there follows upon this a great addition to the amount of ammunition which would be carried in the field. The Germans have added 33 per. cent. and the French 50 per cent. to the equipment in ammunition which was in use at the time of the Franco-German war; a fact which alone is sufficient to emphasize the useful warning against forgetting that the practice of 1870 has really become obsolete. The Russians, we are told, have even gone farther, and have now twelve wagons to the battery, exclusive of forage, store wagons, etc. A battery of Russian heavy field artillery carries no less than 154.5 cwt. of ammunition, and the horse artillery 108.7 cwt. The latter figure is exceeded by both the French and German horse artillery, the weight being respectively 115 cwt. and 119 cwt. per battery. Our own batteries, both of horse and field artillery, carry only 72 cwt. each of ammunition; which is a trifle less than that of the Italian army, but the Italians have in addition a heavy field battery. In fact the British artillery carries far less ammunition per battery into the field than does that of any of the other great military powers.

Turning to the details of the subject, Colonel Walford makes some interesting critical remarks on projectiles. There is evidently considerable difference of opinion between the artillerists of various countries. In common shell for ranging purposes we use a forged steel shell containing 2lb. of powder; the Germans have a cast-iron ring shell with a bursting charge of 6 oz.; while the French employ shrapnel which holds only 2 oz. of powder. Colonel Walford gives the explanation of these differences, which does not appear very creditable to our own military authorities. Our shell was designed with the idea that a large bursting charge would be useful in destroying field intrenchments, a task which is now accepted as being beyond the power of field guns. The French and Germans have combined ranging and man-killing in one shell, although in doing this they have rendered observation difficult by diminishing the volume of smoke. In shrapnel the English and French practice is similar in regard to placing the burster in the head of the shell, whilst all other nations place it in the centre or the base, in which case it is contained in or connected by a tube which passes down the centre of the shell. The reason that the French place the burster in the head is that, when used with percussion fuse, the shell shall burst on graze. This is necessary, as shrapnel is used by them for ranging purposes. We also require our shrapnel to burst on graze, but for a different reason. Our common shell not being a man-killing projectile we have to trust to percussion shrapnel in cases where there is no time for setting the time fuse. A shell with the burster in the base would be less effective with a percussion fuse, since during the time the flash was being conveyed from the fuse to the burster the shell would rise to some height and the bullets would be thrown over the heads of the enemy. The Germans, however, and those who follow their example, use ring shell for the positions in which we use shrapnel. The practice is approved by Colonel Walford, who quotes an instance in which thirteen rounds of ring shell with percussion fuses, from a 6-pounder gun, gave 277 hits on a line of

twenty skirmishers, standing at a range of 1640 yards, two men only being unhit. The objections raised against carrying the burster in the head are that the explosion diminishes the velocity and also increases the dispersion of the bullets. When the burster is in the base an opposite effect is attained. With the latter arrangement naturally such great accuracy of ranging or of fuse is not required. Against this must be set the disadvantages due to the time required for the fuse to communicate with the burster when the latter is in the base.

The question of high explosives is next dealt with in the paper. Both the French and Germans have adopted high explosives for the bursting charges of common shell. The French use a steel common shell 4 calibres in length. This is filled with 3 lb. of cresylite; which is a compound of cresol, a product of coal tar. The shell has a percussion fuse and is intended to destroy earthworks, walls, etc. A ninth wagon, carrying 75 of the projectiles, has been added to each heavy battery. The German shells, which replace a portion of the complement of powder shell, are 15.8 lb.; the same weight as the ring shell. They are filled with wet gun-cotton and are intended to be used as a rule with a time fuse against men. The following are given as the reasons for the adoption of this common shell.

It is recognized that, owing to the low trajectory of modern artillery, troops can obtain shelter from its fire by standing close into a parapet, provided, as will generally be the case, the ordinary fire of artillery may, as at Plevna, be found useless for the purpose of preparing the infantry attack on a strongly fortified position, since the defender's infantry will remain under cover up to the moment when the guns of the assailants will be compelled to cease firing (owing to the advance of their own infantry), and will then, having suffered no previous loss, be prepared to offer a stubborn resistance to the endeavors of the attacking troops to pass over such open ground as may lie in front of the intrenchment. Realizing the absolute necessity of reaching these sheltered troops with artillery fire, the Germans propose to take advantage of the fact that the enormous local power of a high explosive is able to altogether overcome the velocity of the projectile at the moment of bursting, and thus distribute the splinters of the shell in all directions; they anticipate that it may, therefore, be possible, by bursting shell in the rear of concealed troops, to drive splinters in upon them from the rear, and thus to some extent cancel the value of their cover. It is, however, evident that, in order to obtain such an effect, the burst must be very accurately timed, while the difficulty of insuring this exactness will be much increased in practice by the fact that the absence of smoke from the detonation of gun-cotton will render uncertain the observation of fire.

The latter objection, we have no doubt, is one that could be overcome in practice.

From what has been said it will be seen that the French and Germans proceed on quite different principles in employing high explosives in the field, for while the French aim at destroying cover by a flying mine of enormous power the Germans seek to render such cover useless. Colonel Walford says that: "The next war will possibly enable us to judge as to which of the two nations has reasoned most rightly." It would appear to us, however, that if the German system is founded on experiments which justifies its practicability—and knowing what we do of German methods this may be pretty freely accepted—the gain in time would be found of over-

whelming importance. Colonel Walford, however, lays stress on the word "possibly" in his sentence here quoted: "It does not appear certain," he says, "that this new engine of warfare will ever be brought to the test of actual combat, and it is much more than probable that, even should this be the case, the French will in the mean time have abandoned melinite and its derivatives, which have already led to many serious accidents." Neither shells nor fuses can always be perfect, and "Whatever form of high explosive may be retained or may be invented, it is in any case unlikely that it will be free from the very serious defects that an accidental explosion in the gun, whether it be caused by a defective fuse or a defective shell, will almost certainly lead to the destruction of the gun by a violent and most dangerous explosion." The demoralizing effect of men not being able to rely upon their guns was unhappily too often illustrated in our last great naval war, when the bursting of a gun was looked on as more serious than ten times the same destruction caused by the enemy. It is not only in our own days that British marine artillery has not been all that it should be.

It will be noticed that neither the French nor the Germans propose using high explosive shells against troops in the open. The tremendous action of these explosives breaks the shell up into a very large number of very small fragments, which are projected violently in all directions, many of them into the air or down to the earth at once. These small fragments, many of them no larger than one's finger nail, soon lose their velocity, so that a man would probably be safe at a distance of 50 yards from the burst, Shrapnel bullets would be effective at least 150 yards from the point of burst.

It may be said, however, that Colonel Walford states it his firm opinion that "a complete and reactionary return to our old explosive gunpowder, is as impossible as is the readoption of bows and arrows for our national weapons." The two important features of smokeless powder upon which the paper dwells are its keeping qualities and its corroding and eroding qualities. It has, however, rendered officers independent of many complicated formations, which were formerly necessary on account of smoke, and this is of more importance as every nerve has to be strained in the present day to find room on the field for the increased number of guns.

In concluding his lecture the author gave the following as the chief heads under which he anticipated further progress was about to take place, viz.:

1. Universal use of smokeless powder.
2. Use of high explosives for shells.
3. Increase of the length and therefore the capacity of the shells.
4. Employment of field howitzers or mortars.
5. Increase of the muzzle velocity of guns.
6. Increase of the amount of ammunition carried.

## Military Notes.

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### BULLETS VERSUS SNOW.

THERE have been printed recently two accounts of firing against snow, one in the *Russti Invalid*, the firing having taken place the past winter; the other in the *Engineering Journal*, the firing having taken place the previous winter.

The object of these trials was to determine the thickness of snow, under different conditions, necessary to resist rifle fire. The tests were made with the Berdan, and naturally allowances must be made for any of the new guns. The distances varied between 150—600 steps and the breastworks were of varying thickness.

In general it may be said that a breastwork six feet thick and made of snow thrown up loosely would satisfy all conditions of protection against direct fire. If the same snow were beaten with the spades and feet, five feet would suffice. If the latter were made of moist snow and allowed to freeze four feet would suffice. If water were poured on so as to make a crust of ice two inches thick, then three and one-half would answer.

It was found, however, that the frozen breastwork offered the best protection at all distances—taking into consideration the labor expended in construction.

### SKOBELEFF'S OPINION OF THE LANCE.

(Translated by Lieut. J. C. Bush.)

In 1877 when General Skobelev was as yet governor of the Ferganah Territory in Central Asia, he addressed the following note to General Kaufmann, who commanded the military department of Turkestan. The note had been called forth on the occasion of some remarks made by the Ataman of the Orenbourg Cossacks who complained of the want of care his men had shown for their lances while in Central Asia. The greater number had lost them on the way or had not even troubled themselves to take them when recalled from leave to active service.

The Ataman had requested the governors to apply certain measures with a view to causing the price of the lances to be paid either by the Cossacks themselves or by the officers in charge of the detachments.

Upon receiving this request as Governor of the Ferganah, Skobelev referred it to his chief, General Kaufmann, who, in turn, desired the former to study the question of Cossack armament carefully and report whether he deemed it advantageous or not to have these men armed with the lance.

Skobelev replied: "The lance, like all other arms, has its advantages

and disadvantages. It is preferable to the sabre in the pursuit of broken cavalry or in a charge against infantry, but has also numerous defects. In a hand to hand fight with cavalry it requires a special skill and knowledge of its use which our Cossacks do not possess,—with the exception of those of the Don, among whom the lance may be considered in some sort a national weapon.

"In 1863, at the time of the Polish insurrection, one of my comrades having on hand a night expedition with a small detachment composed, among others, of thirty or forty Cossacks of the Don, proposed to them that they should leave their lances behind as these would only bother them when on foot. The Cossacks replied with one voice: 'The men of the Don go nowhere without their lances which are never a bother but in truth faithful companions.'

"Major-General Koulgatcheff once showed me a report made by his grandfather who, in 1829, commanded a regiment of Cossacks in the war against Turkey. This report told of killing twenty-nine Turkish officers with the lance in single combat.

"The Austrian uhlan, and for that matter all Poles of Galicia, (the lance was always considered the arm of the uhlan, that is to say, as a weapon essentially Polish\*) in the engagements which they had with the Prussian dragoons, during the war of 1866, used their lances simply as clubs for striking their opponents.

"The lance incommodes the trooper more than any other weapon. It is not necessary to load the man down with a whole arsenal of weapons, each of which he cannot learn equally well.

"The armament of cavalry should, I think, be composed of a rapid-fire carbine and a sabre, of which the blade should be straight so that it can serve either to cut or thrust.

"The French cavalry, armed with a nearly straight sabre, is the only one that can be taught to point.†

"During the war 1870-71, the Prussians became convinced, by experience, of the superiority of the thrust over the cut, and endeavored to train their men to point as well as cut. It is a matter for remark that of the numerous weapons of all kinds taken from the French, the Germans, after the war, adopted only the sabre in place of their own (except, as is well known, the shortened Chassepots with which their cavalry was for a short time armed).

"Our own cavalry should also learn to thrust with the sabre.

"In the French cavalry lances have entirely disappeared.‡ In the Prussian and Austrian service the regiments having lances are those possessing double rank formations.

"With us the uhlan, the hussars and the cuirassiers have lances for the

\* The word uhlan is in reality of Polish origin and comes from *oula* which signifies lance in the Polish language. But it is necessary to add that the traditional employment of the lance is far from being preserved among the Poles, as among the Cossacks of the Don, and other agricultural and pastoral people, whose children grow up with the lance in their hands, so to speak, since they use it for driving their herds.

† We must not forget that Skobeleff wrote in 1877.

‡ This was practically true in 1877.

front rank only,\* while in the regiments of Don Cossacks both ranks are so armed. I do not approve of the former system. In the charge 'en-lave,'† as foragers, or even in close order, the ranks become mingled and there is, consequently, no reason for arming them differently. In any cavalry, when the first rank is armed with the lance, the number of men who can dismount to fight on foot is only half of the effective in place of two-thirds, for only the rear rank can dismount and not two men out of three in each rank.

"Without failing to recognize the good qualities of the lance, I am decidedly opposed to its employment in the armament of Cossacks and particularly for the front rank alone. If we wish to arm Cossacks with the lance, let us give it to both ranks. It seems to me best to do away with this weapon among all Cossacks except, perhaps, those of the Don. It may be useful to give them daggers in order to save their sabres in the work of bivouac, or to supply them with revolvers. But on account of what I have said above about the disadvantage of loading the trooper with a whole arsenal of weapons, I decide simply for the carbine and sabre.

"Among all Asiatic people the lance is held in slight esteem. In past times the Turkish cavalry, who had excellent sabres, completely abandoned the lance. We have ourselves seen that the Turkomen, Kirghis and Kiptchaks who possess guns, or even good sabres only, never carry lances. This weapon is never found among them except in the hands of those who have not the means of procuring a gun or sabre. From which I conclude that the appearance of our men armed with lances can produce but little moral effect upon our adversaries of Central Asia.

"In closing I ought to say that personally I have always been and always shall be opposed to the lance. A light rapid-fire carbine and a good straight well sharpened sabre with which one can cut or thrust is the armament which I believe best suited to all cavalry."—*Revue du Cercle Militaire*.

\* Since 1877 the lance has almost entirely disappeared from the Russian cavalry, the regiments of which have for the most part taken the name and armament of dragoons.

† A kind of charge peculiar to the Cossacks and for which the troopers are formed in one rank.

## Reviews and Exchanges.

### Sherman's Memoirs.

HEADQUARTERS DIVISION OF THE ATLANTIC,  
GOVERNOR'S ISLAND, NEW YORK CITY, June 6, 1891. }

EDITOR, JOURNAL M. S. I.

DEAR SIR: In my review of General Sherman's Memoirs in the May number of the JOURNAL, I unwittingly wrote a paragraph which in my intention to contrast old and new methods implies business neglect on the part of the original publishers of the Memoirs. It begins: "On this account we are glad, etc." As I wrote without a sufficient knowledge of facts that have since been brought to my attention, I desire to retract the statement.

General Sherman gave in a letter of May 5, 1890, proposing a transfer of his book from D. Appleton & Co., the following reason: "I was moved to this conclusion by the fact that they (C. H. Webster & Co.) are already the publishers for Grant's and Sheridan's Memoirs, and it is manifest that in future history our three names will be associated, and parties in search of the truth will naturally look for a common agent."

Please insert this in the next JOURNAL.

Yours truly,

O. O. HOWARD,

Major-General, U. S. Army.

### Before, at, and After Gettysburg and The Wirtembergers in the Black Forest.\*

In "Before, at, and after Gettysburg," and in "The Wirtembergers in the Black Forest in August, 1870,"—the latter being written as a sequel or justification of the views expressed in the former, we have a criticism from a scholar and diligent student of military history upon the conduct of Lee's campaign in Pennsylvania in 1863.

While the writer supports his views as to the mediocrity of Lee as a general by many examples of parallel cases drawn from the pages of history, it is incontestably the fact that no process of reasoning, however well founded, will at this late day suffice to shake the high estimation in which his people held his military talents and the veneration in which they now hold the memory of the man.

Many military men will agree with the writer in his estimate of Lee as a general, pure and simple, but that "Lee was neither a great man nor a great leader of men" will find fewer believers.

Lincoln was a great man and a great leader of men, and so was his great opponent Douglass. A man may be a great man and a great leader of men without being a great general, and the writer's criticism upon this particular campaign by the Confederate leader would seem to prove this statement.

\* *Before, at, and After Gettysburg, and The Wirtembergers in the Black Forest.* By Bvt. Major-General J. Watts de Peyster, S. N. Y.



It is singular that the Union general whom the critic selects as being in his opinion most worthy of honor, is the one who of all others most resembled Lee,—slightly in physical characteristics perhaps,—but strongly in his uprightness, steadfastness and grandeur of character.\*

To the military man the "Wirtembergers in the Black Forest," is very interesting and instructive. It is the narrative of a *ruse de guerre* resulting most successfully.

W. L. H.

### The Battle of Manassas.\*

This is something very like a continuation of the argument as to "Who Killed Cock Robin?" It consists principally of powerful assertions most of which we have heard before, cemented together by an argument which does violence to military usage and the meaning of words. General Johnston was present for duty with the Army during the battle; he was of superior rank to General Beauregard—was the senior officer present—and therefore must have been in command. General Beauregard may have planned and re-planned the battle, and personally directed the fighting on the field: he may deserve great credit for his personal bravery and professional skill and be entitled to first honors for the victory, but he did not command, except as the lieutenant of General Johnston. Perhaps the most surprising feature of the whole controversy is the fact that a professional soldier should set up such a claim.

To have, on the eve of battle, an officer of rank, who is familiar with the ground and the Army, and who knows the probable strength, position and purpose of the enemy, is simply to have an instrument which it would be criminal not to use for all it was worth: but to transfer the command and responsibility to such an instrument, and practically retire from the contest, would be not only criminal but cowardly. And that is the character which the author would fasten upon General Johnston.

That the superior arrived on the eve of the battle, or even during its progress, in no way alters the case. After his arrival the junior, however active he may be and whatever latitude he may be allowed in the management of the battle, is only the lieutenant of the commander. But this need not lessen his laurels in the least. It is what he did and not what he was, that must determine his fame, and there seems to be little controversy as to his actions in this case. General Beauregard's Bull Run laurels are safe enough.

In glancing over these pages, which pretend to be an argument in favor of the truth of history, we are amused to find long exploded fictions paraded as well-established facts. For instance, the "Superior Federal Army," which figured in early Confederate reports, and was faithfully reproduced in certain *Century* articles in connection with the battle of Bull Run, is still a stock expression which falls from the author's pen as glibly as if it were the naked truth. (p. 1.) Now the strength of the opposing armies at that battle has been determined with as much care and conscientious exactness as any fact of the war, and there was no such disparity of numbers as would justify the expression. Indeed "The opposing armies, both in the aggregate and in the parts engaged, were nearer equal in that than in any other battle in Virginia." ("Battles and Leaders," I. 175 n.)

The language used occasionally indicates temper, which greatly weakens its effect, although it leaves no doubt in the reader's mind as to the author's convictions. He has actually argued himself into the belief that he exercised supreme command on the Confederate side at the battle of Bull Run. Still, when we turn to his official report—*Reb. Rec. Ser. I. Vol. II. p. 486*—written on July 26, 1861, when all the facts must have been fresh in his memory, and read, "General Johnston arrived here about

\**A Commentary on the Campaign and Battle of Manassas.* By Gen. G. T. Beauregard, C. S. A. G. P. Putman's Sons: New York.

noon on the 20th July, and, being my senior in rank, he necessarily assumed command of all the forces of the Confederate States then concentrated at this point," we wonder when and where and why he changed his mind.

The author evidently felt the force of that sentence in his official report, and tries to counteract it by citing a letter written to General Jackson ten days before. (p. 4.) The clause upon which he relies, and which he italicizes is: "I commanded in person on the field on that occasion." He manifestly desires that his readers should accept this as equivalent to saying "I commanded on that occasion." But they are not equivalent. And indeed General Beauregard had no such idea when he penned his letter, for he says in the very same letter, "All trophies will be sent with my report to the General Commanding for transmission to the War Department." He made no claim to supreme command at that date, although the germ of the idea had probably found a lodgment in his mind.

It is an interesting psychological study to trace the growth of an idea in the human mind. The germ of this idea of supreme command at Bull Run, which has grown almost into a mania in the mind of General Beauregard, probably found a lodgment there during the battle. He certainly was allowed great latitude in the management of the battle, which might have suggested independence. But the idea had not obtained a controlling influence when he wrote the letter to General Jackson—August 16, 1861. He recognized at that date the presence of a Commanding General, and the force of the regulation which required his report to be forwarded through him. But after over a quarter of a century, in 1887—"Battles and Leaders," I. 226) he refers, parenthetically, to that report in a very different tone. He says "A report that was placed in his hands for perusal before transmission." As if the act was one of courtesy and not of duty. The germ had become a full grown, dominating idea, almost a mania as we have already said, which defied the evidence even of his own words.

It is not surprising then that the author can see no proof of General Johnston's position at Bull Run in other people's orders and reports. Even the order of General Johnston dated Headquarters Army of the Potomac, July 21, 1861, 4.30 A. M., which gave vitality to his own order of July 20th, is, in his estimation, only a written approval of his plan, although it contains the pertinent clause which directs, that that plan "will be executed accordingly." (Reb. Rec. I. Ser. Vol. II., p. 480.) Nor should we wonder that a mind so warped by one idea, should color a conversation held thirty years before. (p. 15.) We find the substance of that conversation as given in official reports, (Reb. Rec. I. Ser. Vol. II., 475, 486) entirely at variance with the version now given, and strictly in harmony with the statements of General Johnston in his article in the *Century Magazine* ("Battles and Leaders," I. 245.)

The reasoning on page 22, upon what the author assumes that General Johnston "inwardly felt," is very ingenious but unsatisfactory. Of course the premises cannot be conceded; but even admitting the correctness of the diagnosis, the conclusions reached are untenable. Why, if General Johnston had desired to avoid responsibility for the coming conflict he might have stayed away. He might have sent his troops without accompanying them with very good grace. But having accompanied them to the field of battle he became the responsible commander whether he liked it or not.

But the most extraordinary argument in the whole book, is that advanced on page 87. The author says in effect, that General Johnston was not in command at Bull Run, because, if he had been, "instead of resolving to fight out the battle on the left to maintain the position of Manassas, he would have probably then issued an order of the army to fall back behind the Rappahannock." This prognosis is deduced from "General Johnston's subsequent methods." There is something radically wrong with a mind that reasons in that way. General Johnston promptly accepted and vigorously

supported the battle on his left, with a comprehension of its magnitude and meaning, which the author, influenced perhaps by his previously prepared plan, failed to grasp so readily. He abandoned his plans with manifest reluctance, being convinced that an attack by his right was the proper counter to McDowell's blow. And perhaps it was. We are not concerned with that question at present. We think, however, that if General Beauregard had been in supreme command something of the kind would have been attempted.

On page 93, the author raises the question of veracity between himself and General Johnston in a pointed and somewhat dramatic manner; but in the paragraph next succeeding the contradictions are much modified, and become perfectly reconcilable. General Johnston's statements are in harmony with those contained in "Johnston's Narrative," page 49, and his official report (Reb. Rec. I. Ser. Vol. II., p. 475.) The statement made in the *Century* article ("Battles and Leaders," I., 248), that, "while we were riding forward General Beauregard suggested to me to assign him to the immediate command of the troops engaged \* \* \* to which I assented." As already said the statement is in perfect harmony with his previous statements on the same subject. But the author denies that anything of the kind occurred. He says "neither when riding forward \* \* \* nor after rallying the troops, \* \* \* did General Beauregard request him to assign him to the command of the troops engaged," etc., etc.

But the author admits in the next paragraph that he did have a conversation with General Johnston, and that he "felt" \* \* \* that either General Johnston or himself should go \* \* \* to the rear. And that he requested General Johnston to go while he himself should remain in command of the field. We have no doubt that a cross-examination would bring the two statements into perfect accord. General Johnston says that General Beauregard said, what General Beauregard, thirty years after the event, says he "felt" but did not say.

But we have carried this criticism far enough. Those who are interested in the subject will do well to read the book. The summary of the maxims of war at the end of the volume give it an abiding value, and ought to give it a place on every soldier's book shelf.

JAMES CHESTER,

Captain 3d Artillery.

### The Old Navy and the New.\*

To the student or to the professional reader, whether naval or military, Admiral Ammen's book is certainly disappointing. After reading the volume through there is left in the memory no reminder of the Old Navy or the New, except in so far as mention is made of various vessels on which the Admiral has served at different times of his long and honorable career.

As a volume of reminiscences the book is of value as the result of memoranda made from time to time, and generally on the spot, by a man who has travelled much and observed closely. Many parts of the world which he has visited are still unknown lands to those outside, and here we find the greatest interest. As a case in point we may mention his trip up the Parana and the visits paid to the towns along its banks.

What makes the work more pleasant as a volume of recollections is the way in which the author wanders along with apparently no regard for sequence of thought or incident. It is as though he were telling the story of his travels to a few friends in the way which would be most taking to his listeners.

\* *The Old Navy and the New.* By Rear-Admiral Daniel Ammen, U. S. N. With an Appendix of Personal Letters from General Grant. 8vo, pp. 553. Philadelphia: Lippincott Company.

Admiral Ammen entered the Navy in July 1836, just a year and three-quarters before the celebrated voyages of the *Sirius* and the *Great Western*, which decided the question of the practicability of crossing the ocean by other power than the wind. In those days the ships were of wood and sails alone afforded the means of motion. Afterwards came the use of steam, first by means of paddle-wheels, then by the screw. This advance was followed early in the Civil War by the application of iron to the wooden hull to make the latter impervious to shot from the guns of those days. Then came the days of the still-continuous strife between ordnance and armor, to be ended—who can say when?

On all these topics the Admiral is silent. Had he so wished he might have written a work of inestimable value to both the scientific and the professional man. Nowhere, however, do we find any description of the vessels in which he has sailed, except where he speaks of their comparative comfort in a certain way.

Admiral Ammen mentions his ram at great length. This is but natural as the vessel building under his design is, probably, the first of its class in the world. It is to be regretted, however, that he has not given a more extended description of this vessel, telling something about her dimensions, tonnage, speed and probable coal endurance.\* A ram to be thoroughly effective must have more speed than any vessel against which it may be called to act. If it have not this, either of two things may happen: 1st, the vessel attacked may run away; 2d, it may keep itself just far enough off from the ram to use its guns effectively and batter the latter out of shape. On these points the Admiral tells nothing but that "four several calculations for speed give a common result, in every regard assuring as compared with that of any vessel of the same displacement and horse power." But what are the expected speed, displacement and horse power of the ram?

The chapters on the trans-isthmian canal and the ship railway will attract attention from all who are interested in such questions of transportation. To Admiral Ammen more than to almost any one in this country is due the beginning of the Nicaragua Canal. His persistency in bringing it up in season and out of season shows him to be a man of determination when once he has taken up an idea, and to him, if he live to see the canal completed, must come a large share of the credit of the scheme.

That he is not backward in assuming responsibility and in acting promptly is clearly shown in the case of the mutiny of the *Ocean Queen*. The story is briefly put in the memoirs but enough is given to present a clear idea of the case.

As a whole the book is pleasant to read. Its mode of writing allows one to take it up at odd moments and thus spend many bits of time with many men in many climes. Still one cannot help wishing that it had been more professional. F.

### Historical Register of the United States Army.†

This excellent work, the result of many years labor on the part of one whose position in the office of the Adjutant-General gave him exceptional advantages, forms a thoroughly complete and reliable book of reference on the subject of which it treats.

The story of its development is best told in the author's own words: "Having been

\* In an article on the Ammen Ram by Wm. G. Gibbons, Esq., and published in the Proceedings of the U. S. Naval Institute, Vol. VIII, No. 2, the following data are given:

|                      |               |
|----------------------|---------------|
| Extreme length.....  | 205 feet.     |
| Extreme breadth..... | 36 feet.      |
| Deep draught.....    | 13 feet.      |
| Displacement.....    | 1400 tons.    |
| Speed.....           | 13 knots.—Ed. |

† *Historical Register of the United States Army*. By F. B. Heitman. Published by the National Tribune, Washington, D. C.

an employé in the office of the Adjutant-General of the Army during the past twenty-eight years, I became thoroughly familiar with all the records pertaining to appointments, commissions and service of officers of the Army, and obtained the permission, in 1873, of General Townsend, then Adjutant-General of the Army, to engage in compiling this work. The privilege thus accorded me was courteously extended by his successor, General Drum, to whom I am deeply indebted for unlimited access to any and all records in this department.

"Everything relating to the appointment of officers was destroyed by the burning of the War Department, November 9, 1800, and again partially by the British, in 1814. It therefore became necessary, in order to supply the missing links, to search the Executive journals of the United States Senate, pay accounts in the Treasury Department, old manuscript registers in the possession of families or descendants of deceased officers, etc. In brief, neither labor nor expense has been spared in securing the most reliable information possible, and a slight conception of the magnitude of the task may be gathered from the fact that I have diligently applied myself, when not engaged in official duties, for seventeen years in the effort to produce this compilation, in the hope that it may be a standard and reliable work of reference."

From the close of the Revolutionary War to September, 1789, there was practically no United States Army. A regiment of infantry and a battalion of artillery, in all about 700 officers and men, were retained at the close of that war to guard public stores and property and to occupy posts vacated by the British on the northwest boundaries.

The troops provided by act of June 3, 1784, were formed into a regiment, consisting of eight companies of infantry and two of artillery under the command of Lieut.-Col. Josiah Harmar. Two additional companies of artillery were subsequently organized.

No appointments or commissions had been issued by the General Government, the officers holding their appointments from the States which had furnished the quota. By act of September 29, 1789, this force was "recognized to be the establishment for the troops in the service in the United States." The officers retained were all commissioned as of the United States Army from September 29, 1789. Service prior to this date is thus referred to in the work as in the Revolutionary or Continental army.

The subject-matter, divided into three parts, gives first, the names of the Presidents, Vice-Presidents, Secretaries of War and Commanding Generals of the Army with date of birth, service, etc., a list of general officers of the U. S. Army and Volunteers with period of service, a complete roster of field and staff officers of the line and a table showing promotion of graduates of the U. S. Military Academy and numbers in each class; second, a complete list of commissioned officers of the Army since 1789, showing service, appointments, etc.; third, a list of officers of volunteers during the war with Mexico, a list of field officers of volunteers and militia and captains of volunteer light batteries in the service of the United States during the War of Rebellion, a list of general officers of the United States and Confederate armies killed, or who died of wounds during 1861-65, a list of general officers of the Confederate Army, tables illustrating the most important changes in the organization of the Army from 1789 to 1889 and a comparative statement of the number of men furnished and deaths in the U. S. Army during the War of the Rebellion.

A short sketch of each regiment, giving dates of changes in organization with acts of Congress which caused them, precedes the list of its officers.

The typography is excellent and the arrangement convenient and handy for reference. The work accords in every way with the labor expended and the advantages possessed by the author.

J. C. B.

## Recent Works By Captain King.\*

Captain King's inimitable facility as a story-teller has given him a unique position in the literature of to-day. The work he is doing in representing so attractively the labors and loves of the Army is deserving of higher recognition than it ordinarily receives. Our Army is so insignificant a feature in our country's life that we are in danger of being forgotten except in moments of national peril. The brilliance and glow of King's books casts a glamour of interest about the routine of garrison life that cannot fail to deepen a favorable impression upon the part of the public. His books not only furnish amusement for an idle hour, but in a modest and singularly attractive way they picture the brave deeds and gallant exploits of the author's whilom comrades, acquiring for them a recognition which tons of official reports could not elicit.

In his *Trials of Staff-Officers*, he pictures in the most vivid and taking manner experiences, companions to which could be furnished by almost every officer of any experience, had he King's facility as a *raconteur*. The collection forms an exceptionally correct picture of some hitherto undescribed phases of military life.

The second work under consideration furnishes a still more convincing evidence of King's preëminence in his own field. The stories of which it consists are of varying order of merit and all of them are unfortunate in being placed in comparison with the work of the distinguished editor of the work. They are genuine garrison yarns, however, and will readily drive away the *ennui* of a summer afternoon.

J. E. P.

## The Soldier's First Aid Handbook.†

The conscious helplessness of most men in the presence of accident is intensified in the military service, where either the responsibility of authority or the regard of comradeship is always present. The company officer who sees his men wounded, the private soldier ordered to carry his fellow away, is too often oppressed by the suffering that he is powerless to relieve. But the man who absorbs the principles expressed in this little book will be lighter in mind and more useful in body.

The first twenty pages comprise a brief sketch of human anatomy, the remaining sixty of the text are taken up with plain directions of the principles of relief in wounds and other accidents; the whole being an abstract of the lectures the author gave to the company bearers at his post. The book is well indexed for reference, and is interleaved for note-taking. To what degree the official system of company bearers will be useful in war is doubtful, but as far as our observation goes the medical officers have worked faithfully to instruct in garrison such men as have been detailed. The advantage of this publication is that it puts in form for study or consultation the facts and opinions that nearly all such officers have labored to set forth, and the wider its circulation in the Army at least so much the better for all concerned. Its special virtue is that it does not attempt to do too much, it does not present the edge-tool of special knowledge to be flourished by the ignorant, but offers appropriate measures for the use of ordinary men. As an admirable synopsis of what and how much to teach, it is cordially commended to instructors in both the permanent service and the National Guard. Oral lectures would be filled out by illustration and commentary, but this skeleton is adequate for a well developed course. And for immediate reference it is sufficient and to the point.

\* *Trials of Staff-Officers*. By Captain Charles King, U. S. A. Philadelphia: L. R. Hamersley & Co. 1891.

By *Land and Sea*. Edited by Captain Charles King, U. S. A. Philadelphia: L. R. Hamersley & Co. 1891.

† *The Soldier's First Aid Handbook*. By William D. Dietz, Captain and Assistant Surgeon, U. S. Army. New York: John Wiley and Sons. 1891.

It is an open question whether the amount of careful instruction that is given company bearers is not a waste of energy, except as far as all knowledge well taught is good. In theory four private soldiers are supposed to be those in barracks upon whom would immediately fall the disposition of every emergency case. In fact a private soldier is powerless in the presence of any non-commissioned officer, and it is to the latter the men look for immediate direction and help. So in the field. A bearer is as liable as any one else to be disabled. It seems to us that a short, compact, well-illustrated course of instruction with recitations, obligatory upon all non-commissioned officers, with the privilege of attendance to officers and privates, would put the essentials of first aid where they would do the most good. Then a very moderate drill in the manual of the litter to the whole company, would so familiarize them with it that any designated men could do what would be required when thus detailed without further direction. To depend upon any particular four men for such service is absurd. If every soldier is supplied with a small packet of field dressings for his own use, the non-commissioned officers instructed in its employment, and a general knowledge of the manipulation of the litter given to the whole command, all the men will soon learn what to do in an emergency. The Hospital Corps may be instructed and drilled up to any degree of special efficiency. This book contains no drill but it gives a basis for all the rest.

W.

### The 159th Regiment, N. Y. Volunteers.\*

As a modest, straightforward account of the services of a regiment this regimental history will rank very high among similar productions.

The author gives a plain statement of facts, and claims for the regiment no more than is evidently its actual due. It is strictly a history of the regiment only, and in that respect is a little disappointing. While the companies of a regiment may be thought of as being as closely related to each other as brothers, the regiments of the brigade should bear at least a cousinly relation, and the history of a regiment is so interwoven with that of the regiments with which it fought that they would seem to be entitled to a little more attention than the author has given them. However, this is a history of a regiment simply, and perhaps the author is right in sticking closely to his text.

The book is well printed and bound, and the maps and plans with which it is well supplied are of great value.

The author has been frank, soldierly and evidently strictly truthful in his record, and his work clearly entitles him to the lasting gratitude of his fellow soldiers.

W. L. H.

\**The 159th Regiment Infantry, N. Y. State Volunteers.* By William F. Tiemann, captain and commissioned major.



## BOOKS RECEIVED.

- The Battle of Seven Pines.* By Gustavus W. Smith, formerly Major-General, Confederate States Army. New York. 1891.
- By Land and Sea.* Edited by Captain Charles King, U. S. Army. Philadelphia. L. R. Hamersley & Co. 1891.
- Trials of a Staff-Officer.* By Capt. Chas. King, U. S. A. Hamersley & Co. Philadelphia. 1891.
- Captain Blake.* By Captain Charles King, U. S. A. J. B. Lippincott Co. Philadelphia. 1891.
- The 159th Regiment Infantry, N. Y. State Volunteers.* By Wm. F. Tieman, Captain and Commissioned Major. Brooklyn, N. Y.
- Before, at, and After Gettysburg. The Wirtembergers in the Black Forest, in August, 1870.* By Bvt. Major-General J. Watts de Peyster, S. N. Y. New York. 1891.
- Professional Papers of the Corps of Royal Engineers.* Vol. XV. 1889.
- Historical Register of the United States Army, from its Organization, Sept. 29, 1789, to Sept. 29, 1889.* By F. B. Heitman, Clerk, Adjutant General's War Department. Washington, D. C. 1890.
- Instructions for Courts-Martial and Judge Advocates.* Prepared by Captain Hobart K. Bailey, Acting Judge Advocate, U. S. Army.
- The Old Navy and the New.* By Rear-Admiral Daniel Ammen, U. S. N. Philadelphia. J. B. Lippincott Co. 1891.
- A Commentary on the Campaign and Battle of Manassas of July, 1861.* By Gen. G. T. Beauregard. G. P. Putnam's Sons. 1891.

## OUR EXCHANGES.

## ARTICLES OF MORE OR LESS MILITARY INTEREST.

## ARGENTINE REPUBLIC.

*Boletin del Centro Naval.* (March and April, 1891.)

## BELGIUM.

*Revue De L'Armée Belge.* Fortifications of the Future According to English Authors. Study of Powder and Explosives in Their Relation to Military Destructions. Attack and Defense of Places. The Mangin Projector on War Ships. Formulas for Calculating the Charge for Indirect Fire in Sieges. Actual Situation of Fortification. Studies of Light Infantry—Its Rôle in the Past and in the Battle of To-day.

*La Belgique Militaire.* The Death of Field Marshal von Moltke. The Belgian Gendarmes. Electric Light Projectors in England. Mobilization of the 11th Corps.

## ENGLAND.

*Proceedings of the Royal Artillery Institution.* (April, 1891.) Imperial Federation and the Defense of the Empire. Some of the More Recent Developments and Applications of Explosives. (May) Franco-German War. Memoir of General Sir John St. George, G. C. B., R. A. Recent Armor-Plate Trials.

*Journal of the Royal United Service Institution.* (Vol. 35, No. 158.) The Development of Field Artillery Material. Attack Formation. Manning the Fleet. The Tactical Operations of the Future, As Affected by the Introduction of Magazine Rifles, Machine and Quick Firing Guns and Smokeless Powder. On Battalion Command.

*Aldershot Military Society.* The Phonograph and its Practical Applications to Military and Other Purposes. The Battle of Villiers-Sur-Marne on the 29th Nov., 1870. Electricity and its Tactical Value for Military Operations. The Battle-field of Noisseville (31st August, 1870) Revisited.

*Professional Papers of the Corps of Royal Engineers.* (Vol. XV.) London, 1890. Subaqueous Foundations. The Duties of Royal Engineers in the Field. Field Artillery. Mathematical and Surveying Instruments. Ships versus Forts.

*The United Service Magazine.* (May, 1891.) General Sherman. The British Army in India. Fallacies respecting Coaling Stations. British Outposts on Actual Battle-fields. France and Germany. Tactical Guides for the Cavalry Division.

## FRANCE.

*Revue Militaire de L'Etranger.* The Employment of Plunging Fire in the Field, According to Gen. von Laurs. The Army of Norway. The Development of the System of Railroads in Eastern Germany.

*Revue du Cercle Militaire.* Wounds Produced by Small Calibre Bullets. Our Criticism on the Swiss Army. The Great Commercial Routes of Tonkin. Military

Laws in the Parliament of Holland. The Rôle of Infantry in Reconnaissances. The Determination of Distances by Means of Sound.

*Progrès Militaire.* (To date).

ITALY.

*Rivista di Artiglieri e Genio.* (April, 1891.)

SPAIN.

*Memorial de Artilleria.* (April and May 1891.)

UNITED STATES.

*The Century.* (May, 1891) Salons of the Empire and Restoration. A Bulgarian Opera Bouffe. At the Court of the Czar. The Confederate Diplomats, and their Shirt of Nessus. Pioneer Mining in California. Louisa May Alcott. (June) Colonel William Byrd of Westover, Va. Pensions and Socialism. General Sherman's Last Speech. Sherman. The Cry of Russia. At the Court of the Czar. Talleyrand Replies to his Accusers. Law and Lynching.

*The Railroad and Engineering Journal.* (May, 1891). The Pennsylvania Ship Canal. A New Spanish Cruiser. Our Navy in Time of Peace. A New French Steamer. The Submarine Mine and Torpedo in Harbor Defense. Army Ordnance Notes. (June) The Panama Canal. Lacquer as a Protection for Steel Ships. The United States Navy. The Submarine Mine and Torpedo in Harbor Defense. A Triple-Expansion Marine Engine. The Maxim Flying Machine. Army Ordnance Notes.

*The United Service.* (May, 1891) The Measure of the Strength of Steel Armor. Coal Endurance of Her Majesty's Ships. Recent Army Legislation. The Last Victim of the Gauntlet. Attack upon a Railroad Train. (June) Suggestions on the Reorganization of the Personnel of the Navy. A Ride Through the Indian Territory. Legal Aspects of the Killing of General Barrundia. General William T. Sherman. Modern Practical Military Instructions. The Crossing of Columns in the Marsh. A Western Campaign.

*The North American Review.* (May, 1891) The Wiman Conspiracy Unmasked. Canada and the United States. Napoleon's Views of Religion. The Modern Extinction of Genius. Lynch Law, and Unrestricted Immigration. (June) Our New Warships. Compulsory Physical Education. The Law and the Lynchers. Another View of Gettysburg. A Chat About Newfoundland.

*Harper's Magazine.* (April, 1891) The French Army. The State of Wisconsin. The Court Theatre of Meiningen. The Behring Sea Controversy. (May) The Salvation Army. The Republic of Uruguay. Some American Riders. I. The English Ancestry of Washington. (May) Some American Riders. II. Up the River Paraná. The Royal Châteaux of the Loire. Town and Village Government.

*The Popular Science Monthly.* (June, 1891) New Chapters in the Warfare of Science, The Natchez Indians. Questions Concerning the Minor Planets. The Characteristics of Insects.

*Outing.* (May, 1891) Some of Our Fishing Experiments in Norway. A Day on the Stream for Trout. The Wisconsin National Guard. The Rowing Clubs of Canada. Canoe Building for Amateurs. Lawn Tennis in New England. (June) Beyond the Great Lakes. The Massachusetts Volunteer Militia. Riding in Japan. Canoe and Rod on the Thames. The Rowing Clubs of Canada.

*Transactions of the American Society of Civil Engineers.* (March, 1891) On the Permanent Effects of Strain in Metals. Steam Heating. On the Use of Asphaltum in Sea Walls.

*Kansas City Times* (To date).

*Table Talk* (To date).

*The Electrical World* (To date).

*The New York Critic* (To date).

*Pharmacology of the Newer Materia Medica* (To date).

*Johns Hopkins University Publications* (To date).

*The 7th Regiment Gazette* (To date).

*St. Nicholas* (To date).

*Monthly Weather Review* (To date).

*Army and Navy Register* (To date).

*Philadelphia Weekly Times* (To date).

*The Boston Courier* (To date).

*Home and Country* (To date).

*Transactions of the American Society of Civil Engineers.*

*Transactions of the Technical Society of the Pacific Coast.*

# Announcements.

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## I.

At a meeting of the Executive Council of the Military Service Institution, held on the 8th day of May, 1891, the following resolutions were passed :—

*Resolved*,—subject to the approval of the members of the Military Service Institution,—that the following provision be added to Section 2, Article V, of the Constitution of the Military Service Institution: “ The ex-officers of the regular army who are members of the Military Service Institution shall have one representative in the Executive Council ; but no ex-officer of the regular army shall be eligible as a representative from or of any staff corps, department, or branch, of the military service of the United States.”

*Resolved*,—subject to the approval of the members of the Military Service Institution,—that the words “ Provided, however that the number of these associate members shall be limited to 200 ” shall be expunged from Section 4, Article IV, of the Constitution of the Military Service Institution.

*Resolved*,—That the Secretary of the Military Service Institution be directed to call a general meeting of the Military Service Institution on the second Friday in September, 1891, for the purpose of considering and voting upon the foregoing resolutions.

## II.

In obedience to the requirements of the third resolution above cited, a general meeting of the Military Service Institution is called for Friday, September 11, 1891, at half-past three o'clock, P. M. at Governor's Island, N. Y.

Members who cannot attend are earnestly requested to send their proxies to the Secretary of the Institution, or to some member of the Council.

In order that members may be able to vote intelligently upon the changes, the Constitution and By-Laws are appended hereto.

# The Military Service Institution.

## *President.*

Major-General JOHN M. SCHOFIELD, U. S. Army.

## *Resident Vice-Presidents.*

Major-General O. O. HOWARD, U. S. A.

Bvt. Brig.-Gen. T. F. RODENBOUGH, U. S. A.

## *Secretary.*

Major W. L. HASKIN, 1st U. S. Artillery.

## *Treasurer.*

Lieut. J. C. BUSH, 5th U. S. Artillery.

## *Asst. Secretary and Vice-Treasurer.*

Lieut. GUY HOWARD, 19th U. S. Infantry, A. D. C.

## *Executive Council.*

### *Term ending 1897.*

BATES, A. E., Major Pay Dept.  
HAMILTON, JOHN, Colonel, U. S. A.  
HUGHES, R. P., Colonel, Insp-General.  
RUGGLES, G. D., Col. Adjt.-Gen's Dept., B.-G.  
SMALL, M. P., Lieut.-Col. Sub. Dept., B.-G.  
WOOD, E. E., Captain 8th U. S. Cavalry.

### *Term ending 1895.*

ABBOT, H. L., Col. Corps Engineers, B.-G.  
BARR, T. F., Lieut.-Col. D. J. A. G.  
HYDE, J. McE., Capt., Q. M. Dept.  
LUDER, R., Lieut.-Col. 1st U. S. Artillery, Col.  
MORDECAI, A., Lieut.-Col. Ordnance Dept.  
WETHERILL, A. M., Capt. 6th U. S. Infantry.

### *Term ending 1893.*

KINGSBURY, H. P., Capt. 6th Cavalry.  
MIDDLETON, J. V. D., Major Med. Dept.  
OTIS, E. S., Col. 20th U. S. Infantry.  
SHALER, Chas., Captain Ordnance Dept.  
TOMPKINS, C. H., Colonel A. Q. M. G., B. G.  
WEBB, A. S., Bvt. Major-General, (late) U. S. A.

## *Publication Committee.*

Generals ABBOT, RODENBOUGH, Colonels HUGHES, OTIS, and Lieut. BUSH.

## CONSTITUTION.

### ARTICLE I.—TITLE.

This Society shall be known as the Military Service Institution of the United States.

### ARTICLE II.—DESIGN.

The Design contemplates professional unity and improvement by correspondence, discussion, and the reading and publication of Essays, the establishment of a military Library and Museum, and, generally, the promotion of the military interests of the United States.

### ARTICLE III.—LOCATION.

The Rooms or Headquarters shall be in the city of New York.

### ARTICLE IV.—MEMBERSHIP.

*Sec. 1.*—All Officers of the Army and Professors of the Military Academy shall be entitled to membership, *without ballot*, upon payment of the entrance fee.

*Sec. 2.*—Ex-Officers of the Regular Army, of good standing and honorable record, shall be eligible to full membership of the Institution *by ballot* of the Executive Council.

*Sec. 3.*—Officers of the U. S. Navy and Marine Corps shall be entitled to membership of the Institution, *without ballot*, upon payment of the entrance fee, but shall not be entitled to vote nor be eligible to office.

*Sec. 4.*—All persons not mentioned in the preceding sections, of honorable record and good standing, shall be eligible to *Associate Membership* by a *confirmative vote of two-thirds* of the members of the Executive Council present at any meeting, *provided*, however, that the number of these Associate Members shall be limited to two hundred. Associate Members shall be entitled to all the benefits of the Institution, including a share in its public discussions; but no Associate Member shall be entitled to vote nor be eligible to office.\*

*Sec. 5.*—The President and ex-Presidents of the United States, the Secretary of War, and the General and Lieutenant-General of the Army shall be Honorary Members of the Institution: *Provided* that the two officers last named shall be eligible for full membership.

*Sec. 6.*—Membership dates from the first day of the calendar year in which the "application" is made, unless such application is made after October 1st, when the membership dates from the first day of the next calendar year. Membership shall be terminated by nonpayment of annual dues for two years.

*Sec. 7.*—An entrance fee of five dollars (\$5) shall be paid by each member, and associate member, on joining the Institution, which sum shall be in lieu of the dues for the first year of membership.

The annual subscription shall not be less than two dollars (\$2), due January 1st.

The payment of a sum of not less than fifty dollars (\$50) shall constitute membership for life.

#### ARTICLE V.—GOVERNMENT.

*Sec. 1.*—The Officers of the Institution shall be a President, two Vice-Presidents, who shall reside near the Headquarters, and as many Vice-Presidents, in addition, as may be required to preside over Branches; a Secretary, a Treasurer, a Vice-Treasurer, an Assistant Secretary, and one Corresponding Secretary for each Branch.

*Sec. 2.*—There shall be an Executive Council, consisting of the officers aforesaid *ex-officio*, and one representative from each Staff-Corps and Department not represented by a Vice-President; two representatives each from the Cavalry, Artillery and Infantry arms, and one representative from the retired list: *Provided*, that these proportions may be disregarded if, in any case, there should not be officers from all such branches of the Service available.

The affairs of the Institution shall be conducted by the Executive Council which may make such By-Laws, not inconsistent with this Constitution, as may seem necessary.

Five members of the Council shall constitute a quorum.

The Executive Council, by a majority vote of the meeting, may fill *for the unexpired terms*, all vacancies which occur among its members.

*Sec. 3.*—The President and Executive Council shall be elected by the Members of the Institution, at a General Meeting to be held biennially, on the second Wednesday in January, or as soon thereafter as practicable. Six

\* See B. L. No. 5.



members of the Council shall go out biennially, by rotation, but may be eligible for re-election.

*Sec. 4.*—The Resident Vice-Presidents, Secretary, Treasurer, Assistant Secretary and Vice-Treasurer shall be elected biennially by the Council, on the last Wednesday in January, or as soon thereafter as practicable, two-thirds of the Council voting.

*Sec. 5.*—Five members of the Council, to be appointed by the Chairman, shall constitute a Committee on Publication and Essays. It shall be the duty of that Committee to examine all papers submitted to it by the Council, and report the disposition which, in its judgment, should be made of them and to recommend to the Council, for publication, the Essays which the Committee may deem most suitable for that purpose.

The preparation of manuscript for publication, as well as the transaction of all business connected with printing and publishing and the editing of the JOURNAL, shall be done under the direction and supervision of the Committee on Publication and Essays, subject to the control of the Council. Three members of the Committee shall constitute a quorum.

*Sec. 6.*—The Council may appoint Corresponding Members of Council, and shall prescribe their duties.

#### ARTICLE VI.—MEETINGS.

A general meeting shall be held on the second Wednesday in January annually, at which the regular report of the Executive Council shall be presented.

The council may call a General Meeting, at ten days' notice, by informing members individually, as far as practicable, and by such public notice as the Council may direct.

#### ARTICLE VII.—JOURNAL.\*

A Journal of the Transactions of the Institution shall be kept by the Secretary; and as often as it may be deemed advisable by the Council, the Journal shall be published and distributed to members, free of expense.

Surplus copies may be sold under the regulations of the Council.

#### ARTICLE VIII.—BRANCHES.

*Sec. 1.*—Branches of the Military Service Institution may be established where the membership is sufficiently large to warrant a local organization.

*Sec. 2.*—The officers of a Branch shall consist of a presiding officer, and of a secretary and treasurer. The former shall be *ex-officio*, a Vice-President, and the latter a Corresponding Secretary of the Institution.

These officers shall be elected by the Branch, at a meeting held, annually, on the second Wednesday in January, or as soon thereafter as practicable. Vacancies shall be filled, at special meetings, for unexpired terms only.

*Sec. 3.*—It shall be the duty of the Corresponding Secretary to keep a Roster of membership, Minutes of proceedings at the meetings, to serve notices upon the members, and to correspond with the Secretary of the Institution, keeping him informed of all changes in membership, and of all business relating to the Institution. He shall also forward papers read before,

\* See Art. v, Sec. 5, and Art VIII, Sec. 3; also B. L. Nos. 1 and 6.

or submitted to the Branch, with a view to a selection by the Publication Committee for insertion in the JOURNAL; and shall arrange with the Quartermaster's Department for the transportation of articles intended for the Library or Museum.\*

*Sec. 4.*—It shall be the duty of the Corresponding Secretary to collect from the members of the Branch their annual dues to the Institution; and, after deducting the necessary expenses of the Branch for stationery, postage, and, when needful, for warming and lighting the Assembly Room, to forward the balance to the Treasurer of the Institution. This remittance shall be made quarterly, with a detailed statement of all moneys received and expended, and vouchers for the expenditures.

*Sec. 5.*—Branches may hold such meetings, and under such regulations as may be decided upon by the local membership.

#### ARTICLE IX.—CHANGES IN THE CONSTITUTION.

Changes may be made in the Constitution at any General Meeting, by an affirmative vote of two-thirds of the members of the Institution voting: *Provided*, that due notice of said meeting shall have been mailed to each member and posted in the rooms of the Institution at least sixty (60) days prior to said meeting; and *provided* further, that absent members may vote by proxy.

#### BY-LAWS.

NO. 1. PRIZE ESSAY.—That a Prize of a Gold Medal of suitable value, together with a Certificate of Life Membership, shall be offered annually by THE MILITARY SERVICE INSTITUTION OF THE UNITED STATES for the best essay on a military topic of current interest; the subject to be selected by the Executive Council and the Prize awarded under the following conditions:

(a) Competition to be open to all persons eligible to membership.

(b) Each competitor shall send three copies of his Essay in a sealed envelope to the Secretary *on or before* (date to be specified). The Essay must be strictly anonymous, but the author shall adopt some *nom de plume* and sign the same to the Essay, followed by a figure corresponding with the number of pages of MS.; a sealed envelope bearing the *nom de plume* on the outside and enclosing full name and address, should accompany the Essay. This envelope to be opened in the presence of the Council after the decision of the Board of Award has been received.

(c) The prize shall be awarded upon the recommendation of a Board, consisting of three suitable persons, chosen by the Executive Council, who will be requested to designate the Essay deemed worthy of the prize; and also, in their order of merit, those deserving of honorable mention.

\*The Quartermaster's Department is authorized to receive from officers and other persons, and forward to their respective destinations (under the regulations governing the transportation of military property and on the same form of bills of lading) articles donated by persons to the Library and Museum of the Military Service Institution at Governor's Island, N. Y. Packages to be marked, "Military Service Institution of the United States, care of Depot Quartermaster, New York, N. Y."—(Extract from Army Regulations.)

(d) The successful Essay shall be published in the JOURNAL of the Institution and the Essays deemed worthy of honorable mention, shall be read before the Institution, or published, at the discretion of the Council.

(e) Essays must not exceed twenty thousand words, or fifty pages of the size and style of the JOURNAL (exclusive of table). *R. March 1, 1880—Amended 1888.*

2. FINANCE COMMITTEE.—That the President of the Council shall appoint three members to constitute a Committee on Finance, Expenditures and Accounts, and that it be the duty of said Committee (subject to the Council) to raise funds, supervise collections, audit accounts, and to control expenditures, provided that the aggregate expenditures shall at no time exceed five hundred dollars until the approval of the Council shall have been obtained. *R. June 6, 1882.*

3. PERMANENT FUND.—That all money which may be received in payment for Life Membership, and as soon as practicable, all moneys which may have been received, together with such sums as the Council may from time to time direct, will be set apart as a Permanent Fund, to be invested by the Treasurer under the direction of the Finance Committee, and only the income therefrom shall be available for expenditure. *R. June 6, 1882.*

4. FOREIGN CORRESPONDENTS.—That the President shall be authorized to invite suitable persons to act as Foreign Correspondents of Council, and otherwise aid in promoting the purposes of the Institution. *R. April 1, 1884.*

5. ASSOCIATE MEMBERS.—That hereafter each applicant for Associate Membership shall be proposed and seconded by a member or associate member. *R. Jan. 30, 1886.*

6. THE JOURNAL.—That an invitation to read a paper before the Military Service Institution, or a request for a copy of the manuscript in a resolution of thanks, after the reading of such paper, shall not be construed to imply that it will be printed in the JOURNAL. The space is limited, and the Publication Committee is held responsible that it is filled to the best advantage from all material on hand. To this end the Committee is empowered to use its discretion in the selection of articles, and in the elimination from any article, so selected, of whatever shall seem objectionable from whatever cause.

(a) That the printing of monographs in advance of, or in lieu of a regular appearance in the JOURNAL, be discontinued, but that the Publication Committee be authorized to print, in pamphlet form, extra copies of such articles as are likely to command a sale in that shape.

(b) That the price of the JOURNAL be raised from fifty cents to seventy-five cents per copy. *R. May 12, 1888.*

(c) Hereafter the JOURNAL shall be published *bi-monthly*. *R. Jan. 30, 1889.*



## Prize Essay—1891.

I.—The following Resolution of Council is published for the information of all concerned :

*Resolved*, That a Prize of a Gold Medal of suitable value, together with a Certificate of Life Membership, be offered annually by THE MILITARY SERVICE INSTITUTION OF THE UNITED STATES for the best essay on a military topic of current interest ; the subject to be selected by the Executive Council and the Prize awarded under the following conditions :

1. Competition to be open to all persons eligible to membership.\*
2. Each competitor shall send three copies of his Essay in a sealed envelope to the Secretary *on or before October 1, 1891*. The Essay must be strictly anonymous, but the author shall adopt some *nom de plume* and sign the same to the Essay, followed by a figure corresponding with the number of pages of MS.; a sealed envelope bearing the *nom de plume* on the outside, and enclosing full name and address, should accompany the Essay. This envelope to be opened in the presence of the Council after the decision of the Board of Award has been received.
3. The prize shall be awarded upon the recommendation of a Board consisting of three suitable persons chosen by the Executive Council, who will be requested to designate the *Essay deemed worthy of the prize*; and also in their order of merit those deserving of honorable mention.
4. The successful Essay shall be published in the Journal of the Institution and the Essays deemed worthy of honorable mention, shall be read before the Institution, or published, at the discretion of the Council.
5. Essays must not exceed twenty thousand words, or fifty pages of the size and style of the JOURNAL (exclusive of tables).

II.—The Subject selected by the Council at a meeting held Jan. 14, 1891, for the Prize Essay of 1891, is

### "THE TERRAIN IN ITS RELATIONS TO MILITARY OPERATIONS."

III.—The gentlemen chosen by the Council to constitute the Board of Award for the year 1891, are :

Bvt. Major-General HORATIO G. WRIGHT, U. S. A.

General E. P. ALEXANDER, Georgia Central Railroad.

General FRANCIS A. WALKER, President Mass. Ins. of Technology.

WM. L. HASKIN, *Secretary*.

GOVERNOR'S ISLAND,  
February 2, 1891.

\*"All officers of the Army and Professors at the Military Academy shall be entitled to membership, *without ballot*, upon payment of the entrance fee. Ex-officers of the Regular Army of good standing and honorable record shall be eligible to full membership of the Institution *by ballot* of the Executive Council.

"Officers of the United States Navy or Marine Corps shall be entitled to membership of the Institution *without ballot*, upon payment of the entrance fee, but shall not be entitled to vote, nor be eligible to office.

"All persons not mentioned in the preceding sections, of honorable record and good standing, shall be eligible to Associate Membership *by a confirmative vote* of two-thirds of the members of the Executive Council present at any meeting, *provided*, however, that the number of these Associate Members shall be limited to two hundred. Associate Members shall be entitled to all the benefits of the Institution, including a share in its public discussions, but no Associate Member shall be entitled to vote or be eligible to office."







# MILITARY CARTRIDGES

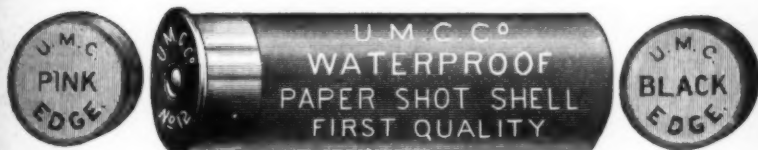
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## Historical Sketches of the Army.

THE following named officers have volunteered, or have been designated to prepare Historical Sketches of their Corps or Regiments for publication in this JOURNAL.

- \* *Adj't. General's Dept.*.....GEN. J. B. FRY.
- Quartermaster's Dept.*....GEN. S. B. HOLABIRD.
- Subsistence Dept.*.....GEN. J. W. BARRIGER.
- Medical Department*.....SURGEON CHAS. SMART.
- \* *Pay Department*.....COL. A. B. CAREY.
- Signal Corps*.....LIEUT. WM. A. GLASSFORD.
- 1st Cavalry*.....LIEUT. R. P. P. WAINWRIGHT.
- 2d Cavalry*.....MAJOR A. E. BATES and CAPT. E. J. MCCLEARNAND.
- 3d Cavalry*.... ..LIEUT. THOS. B. DUGAN.
- \* *5th Cavalry*.....LIEUT. EBEN SWIFT.
- 6th Cavalry*.....LIEUT. F. G. HODGSON.
- \* *8th Cavalry*.....CAPT. C. M. O'CONNOR.
- 10th Cavalry*.....LIEUT. JOHN BIGELOW, JR.
- 1st Artillery*.... ..COLONEL L. L. LANGDON.
- 2d Artillery*.....LIEUT. W. A. SIMPSON.
- 3d Artillery*.....LIEUT. W. E. BIRKHIMER.
- \* *4th Artillery*.....LIEUT. A. B. DYER.
- 2d Infantry*.....GEN. FRANK WHEATON.
- 3d Infantry*.... ..CAPT. WM. GERLACH.
- 4th Infantry*.....LIEUT. JAS. A. LEYDEN.
- 6th Infantry*.....LIEUT. CHAS. BYRNE.
- 7th Infantry*.....LIEUT. A. B. JOHNSON.
- 8th Infantry*.... ..LIEUT. W. P. RICHARDSON.
- 9th Infantry*.....LIEUT. E. B. ROBERTSON.
- 10th Infantry*.....LIEUT. S. Y. SEYBURN.
- \* *11th Infantry*.....MAJOR J. H. PATTERSON and CAPT. R. C. J. IRVINE.
- 12th Infantry*.....LIEUT. CHAS. W. ABBOT, JR.
- 13th Infantry*.... ..LIEUT. M. J. O'BRIEN.
- \* *14th Infantry*.....COLONEL T. M. ANDERSON.
- 15th Infantry*.....LIEUT. G. K. MCGUNNEGLE and CAPT. G. A. CORNISH.
- 16th Infantry*.....CAPT. WM. V. RICHARDS.
- 17th Infantry*.....CAPT. GEORGE RUHLEN, A. Q. M.
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- 22d Infantry*.....CAPT. O. M. SMITH, C. S.
- 23d Infantry*.....LIEUT. C. H. HEYL.
- 24th Infantry*.... ..LIEUT. H. W. HOVEY.
- 25th Infantry*.....LIEUT. GEORGE ANDREWS.

\* Published in JOURNAL.

## THE FIFTH REGIMENT OF CAVALRY.

BY FIRST LIEUT. EBEN SWIFT, U. S. A.

### FIFTH CAVALRY.

WHEN Mr. Jefferson Davis, the war secretary in 1855, had secured the adoption of his pet scheme for the organization of two new mounted regiments, he set out at once to make them worthy of his patronage. Much opposition had been encountered from the class of politicians who are inimical to a regular army, who pretended to fear many plans for conquest abroad or reward for favorites at home, so that, among other compromises, about half of the new appointments were made from civil life. Among the officers of the Army, great rivalry existed for the new places, on account of the prospective increase in rank. Mr. Davis then displayed that fine judgment in the selection of men, which has been said to be the first requisite of greatness, and which afterwards enabled him to place the fate of the Southern Confederacy in the best hands from the early days of the war. Out of twenty officers who joined our regiment from the Regular Army in 1855, those who obtained the grade of general officer in the Rebellion were, Sidney Johnston, Robert E. Lee, Hardee, Emory, George H. Thomas, Van Dorn, Kirby Smith, Oakes, Innis Palmer, Stoneman, "Shanks" Evans, R. W. Johnson, Field, Gerrard, Cosby and Hood. Four of them commanded great armies in the field, and many of the others had large independent commands. Lowe was recommended by Grant, Thomas and Rosecrans, but he was pursued to the end by an enmity which prevented his passing the grade of colonel. Van Camp, whose early promise was as great as the best, was killed at the head of a charge on an Indian village. Among those who entered from civil life, Chambliss, Harrison, Royall and others, were worthy of high commands, but were disabled early in the war; O'Hara was the gifted author of the "Bivouac of the Dead;" Jenifer became a general officer in the armies of the South and was the inventor of the celebrated saddle which bears his name. Later came Fitzhugh Lee and Major, soon to be distinguished Confederate generals; and, in the first days of the war, Custer and McIntosh joined, fought themselves to captaincies, and were then detached to volunteer commands, where great honors awaited them. Another of the lieutenants of 1861 was General Richard Byrnes, who was killed in command of the Irish Brigade at Cold Harbor.

The beginnings of the regiment were in other ways worthy of its thoroughbred personnel. The very best horses were obtained, and the result was the only really excellent mount that the regiment has ever had. The average price was one hundred and fifty dollars, which would be more than equivalent to double that amount at this time. The purchase was made

mostly in Kentucky, by officers designated by a regimental order, and after six years of the hardest kind of service most of these horses were left behind with deep sorrow when General Twiggs surrendered to the State of Texas.

There is not much of interest to recall in the way of arms and equipment. Several patterns of carbine were in use, with Colt's revolvers and the inevitable sabre. The carbine was discarded in the early part of the war, but had to be resumed of course, and is now, with the revolver, replaced by a more efficient arm. The "beautiful white weapon" has remained unchanged, and history fails to record the size of its grave-yard, even in the hands of the cavaliers of the Fifth. Changes in equipment have not been radical, and not all of them have been approved by the best experience. For instance, what fate should pursue the snaffle-rein, to drive it out of use, while we keep the carbine-sling after thirty-five years?

There was the close fitting jacket, trimmed with yellow braid; the silken sash; the black hat, looped with an eagle at the side, with trailing plumes of ostrich feathers. Brass scales for the shoulder, to turn the sabre strokes of the enemy, were provided, but only used for full dress. There were no boots or gauntlets.

The first drills were conducted by Major Hardee, the author of the tactics of that day, and the early discipline soon felt the master hands of such men as Johnston, Lee and Thomas, assisted by as good a lot of soldiers as ever spurred steed in fight or foray. There were rollicking times too, and bouts where eager subs would have drained the brimming Council Cup of Rothenberg without a sigh. They tell of many a run after hounds or over the track, and of "Bumble" and "Eagle" and other famous racers, backed by the light riders of the old regiment, who always carried its colors to the fore. And there was once a game in which a certain lieutenant waged a thousand dollars and did not hold a pair. He afterwards led the forlorn hope of an expiring cause, and the incident was cited in solemn council, to show that such a man would surely fight on the morrow.

A very poor ranch, such as you may run across now in some distant sagebrush Eden of the now frontier, built of stone or logs chinked with mud, with a clay floor and an earthen roof, formed a palatial residence. To such a home the ladies of the old army followed their lords, and counted themselves happy when it was no worse. In those early Texas days most of the time was passed under canvas, with a certainty of constant scouting and a change of station at least once a year. Articles which we regard as necessities, even ice and potatoes, were unheard of luxuries at many posts, and scurvy was a well-known word in hospital records. The houses of the few married men formed charming social resorts which helped to keep alive the graces and refinements of civilization. Many a jolly party met within the narrow quarters, and the Thanksgiving turkey was none the less enjoyed when the guests had to sit on the family beds in order to arrange themselves at table. General Johnston's quarters at Fort Mason consisted of one small room for himself and family.

The early service was well calculated to test the metal of officers and men. In the preceding year General Scott had reported that, in Texas,

Indian hostilities had been more destructive than at other points. Long before the regiment left, the hostiles had been driven far into the interior, and they had been harried in their own hunting grounds and villages. Called to patrol a frontier extending from the Red River in the north, to Fort McIntosh on the Rio Grande, it scouted far into New Mexico, fought in Indian Territory, and defeated Mexican or Indian marauders in old Mexico. Forty well contested engagements were fought with Lipan, Apache, Kiowa or Comanche Indians, and with Mexican guerillas. All who know how hard it is to catch an Indian on the war-path, will appreciate the hard riding, the winter cold, the summer thirst, the quarries trailed but never flushed, the wakeful nights, the heavy days, involved in that brief record. There was no disaster.

The most successful engagements were fought by an expedition to the Wichita Mountains in the winter of 1858-59, under Major Earl Van Dorn. In the two combats of this command over a hundred warriors were left dead on the field; the villages and ponies were captured. Van Camp, already distinguished in several engagements, was killed at the head of his troop. Van Dorn, Kirby Smith and Fitzhugh Lee, were wounded; six enlisted men were killed, and twenty wounded. One of Van Dorn's wounds was at first supposed to be mortal; he was shot at close range by an arrow which went entirely through his body.

On the first occasion four troops, after a forced march of ninety miles in thirty-six hours, came upon Buffalo Hump's Comanche camp, consisting of a hundred and twenty lodges, and between four and five hundred Indians. It was a little after daylight, and a complete surprise. The cavalry was formed in line of troops, in columns of twos, guide right, and so they dashed into the village, which lay among some rough ravines well filled with thick reeds and underbrush. The Indians rallied and fought desperately hand to hand. It was several hours before they were completely dislodged and then they fled, followed by the troops. On the second occasion, after much ineffectual scouting, a part of the same band was attacked again some months after, with like result. For these and other actions high praise was given. The pride of the Comanches was broken.

During the great Rebellion the regiment was engaged before the first defeat, and after the last triumph of the Federal forces. At Bull Run a battalion was with the last organized troops who opposed the Confederates; it served as rear-guard to Centerville and bivouacked on the ground where it lay before the battle. It helped to stop the last advance of Lee's army, and it had killed and wounded at Appomatox on April 9, 1865. There were one hundred and twenty-five battles and minor actions in which loss in killed, wounded and missing, was suffered by one or the other combatant.

The cavalry received little encouragement in the early part of the war. It suffered from the well-known ignorance, in high places, of the fit management and proper use of the arm. The war was nearly half over when Mr. Lincoln asked General McClellan "what the horses did to fatigue anything," and about the same time the celebrated remark about "dead cavalrymen" was attributed to General Hooker, but never made. As a matter of fact the Fifth Cavalry performed some of its best service in those days, when



the arm was outnumbered and overworked. The brilliant dash at Fairfax, the capture of two companies of unbroken infantry by Harrison's troop at Hanover Court House, Custer at New Bridge, McIntosh at Sycamore Church, afforded a few of the examples of successful use of efficient cavalry in those early days. With battle records far exceeding that of the infantry, it was not called upon to suffer the terrible losses of foot troops in single engagements. The opportunities for mounted action were few. When dismounted, it was not its duty to fight desperately in attack or defense. But while the infantry had its season of rest the cavalry was constantly exposed, and suffered a large percentage of loss in almost daily fighting and scouting. Many were captured as a matter of course, from the isolated nature of its duties, but capture meant neither defeat nor dishonor; it generally showed that the trooper had ventured and risked too much.

A regular regiment, during the war, was under many disadvantages. Its field-officers, and many others, were commanding volunteers and serving on important duty elsewhere. The Fifth Cavalry, with the exception of a few months, was commanded by captains and lieutenants. The command of the regiment changed thirty-four times, and, curiously enough, it frequently served under men who had been in its ranks not very long before. It was often difficult to get one officer to a squadron. Casualties among general officers and those on detached service were slight, so that promotion was comparatively slow. In the matter of recruits, as the States, and many of the towns and counties, offered large bounties, the volunteer regiments were more easily kept up to their standard. There were ladies' aid societies, congressmen and newspapers, always watching the home organizations, mindful of their comfort, caring for their wounded, and praising their deeds. The regulars were deprived of these advantages.

There was many a tough tussle of outposts and advance and rear guards, where the cost was not counted and the road unexplored. As Private Mulvaney would have stated the case, the word was "hit first and frequent." The roster was greatly changed by the war. In place of the fire-eating Southerners and hard-riding Northerners of a few years before, we find that all the junior officers were now promotions from the ranks, the best of the sergeants and privates who had learned their trade so well in the good school of border war. There were English, Irish, Germans and Americans among them, and they were a brave, stiff-backed set, who got all the law and the prophets out of the blue book and the tactics. They kept up much of the old style and rigidity of discipline and formed an excellent model for the volunteer cavalry.

At the battle of Gaines' Mill on June 27, 1862, the regiment performed its most distinguished service. On that day, it will be remembered, the Confederate Army, reinforced by the corps of Stonewall Jackson from Northern Virginia, made four desperate attacks upon the Federal left under Fitz John Porter, who was occupying an open plateau, with temporary intrenchments, east of Powhite creek, his left protected by the marshes of the Chickahominy bottom. The sluggish creek flowed through deep banks, concealed by heavy timber; the high ground of the plateau was free of obstacles and suitable for cavalry over a strip varying from four hundred to

one thousand yards in width ; and in the breaks of the plateau, in rear of the extreme left of our line, were massed the weak cavalry brigades of Philip St. George Cooke. In front of the cavalry, the batteries of the reserve artillery were stationed.

It was after seven o'clock in the afternoon ; the sun had sunk below the horizon, the heavy smoke of battle was hanging thicker over the field, and the last attack of the enemy had been made and won. Only the cavalry and a part of the artillery remained on this part of the field. A brigade of Texans, broken by their long advance, under the lead of the hardest fighter in all the Southern armies, came running on with wild yells, and they were a hundred yards from the guns. It was then that the cavalry commander ordered Captain Charles J. Whiting, with his regiment, to the charge. No one had blundered ; it was the supreme moment for cavalry, the opportunity that comes so seldom on the modern field of war, the test of discipline, hardihood, and nerve. Right well was the task performed. The two hundred and twenty troopers of the Fifth Cavalry struck Longstreet's veterans square in the face. Whiting, his horse killed under him, fell stunned, at the feet of the Fourth Texas Infantry. Chambliss was torn almost to pieces with six wounds. Sweet was killed. Only one of the other officers was unwounded. In all, the loss in killed, wounded and missing, was fifty-eight, and twenty-four horses were known to have been killed. Unsupported and almost without officers, the troopers were stopped by the woods of the creek bottom, returned, reformed, and were soon after opposed to the enemy in covering the retreat of the Federal Army. Two days later the same troops were engaged at Savage Station. The guns which were in condition to retire were saved. The facts of that charge speak for themselves. No action was ever more worthy a poet's genius ; no cavalry charge was ever ridden better or against more hopeless odds of numbers. In other lands every survivor of Balaklava has been pensioned and decorated. The German nation will always delight over the record of its cavalry at Vionville and Mars-la-Tour, and the great Chancellor was never so proud as when he embraced the sons who rode in the ranks on that day. The memory of the sacrifice of French cavalry at Sedan is still a balm for many wounds. But while Cardigan, Brédow and Gallifet, each in his own land, received every honor, it is strange to relate that Whiting was dismissed for alleged disloyalty a few months after Gaines' Mill, reinstated after the war, and mustered out of service at the consolidation in 1870. The action of the cavalry received the censure of the Commander-in-Chief and was made the reason for the removal of General Cooke from command. It is not worth while to argue the points of the controversy. The curious searcher after facts will find them in the abundant writings of both Federals and Confederates.

This battle gave a strange instance of the fortune of war. Hood had served as a lieutenant under Whiting in the regiment before the war. Now, at the head of a Confederate brigade, he received the charge of his former comrades. After the fight, finding Chambliss so desperately wounded on the field, he saw that his old friend had every care and attention. Such encounters were frequent. It was Fitzhugh Lee's own regiment of Virginia cavalry that overwhelmed Royall's outpost at Old Church, captured part of

his old troop and wounded a couple of officers. The Rebellion records show that Confederate commanders took some pride in reporting to the Commander-in-Chief that they had encountered his old regiment.

Several years of reconstruction duty, in small detachments, over almost every Southern State, varied by an occasional scrap with guerillas, and much destruction of moon-shine whiskey, were followed, in the fall of 1868, by orders to the frontier of Nebraska and Kansas. The rapid settlement of these States following the war, and the energetic construction of the Pacific railroads, had rallied the savages of the plains to the defense of their hunting grounds. What the Comanches had been to Texas, these Cheyennes and Sioux are in the north. They are without fear, without faith, and without merey, and warriors from immemorial tradition. Killing and stealing form alike their best ideas of earthly honor or of heavenly bliss. In their fight against the whites they have ever displayed a superb courage, which attracts our admiration but does not command our sympathy. It is folly to suppose that contact with white people has made them any more inhuman in their tastes than they have been for ages past.

A quick concentration united most of the regiment under General Eugene A. Carr, the senior major, in western Kansas. Then for over a year there was scurrying over trails hot and cold, along the frontier from the Canadian River in Texas to the Niobrara in Nebraska. The hostiles were often encountered, with varying success, and they were given one crushing defeat. They frequently attacked the troops, and no man's picket-pin was safe from their raids. The most terrible marauder of the lot was Tall Bull of the Cheyennes, and with him were joined the Sioux of Pawnee Killer and Whistler. Against them the efforts of the troops were mainly directed. In July, 1869, General Carr finally succeeded in locating these bands and determining the general direction in which they were travelling. He then marched one hundred and fifty miles in four days, passed around the hostile flank, and by a rapid countermarch approached their village at Summit Springs, Colorado, from an unexpected direction. As the troops moved out of a ravine, formed somewhat as they were at the Wichita village, the eighty-four lodges of the enemy could be seen twelve hundred yards away, and herds of horses peacefully cropping the grass of the slopes beyond. The charge was sounded and away they went like devils of dust over the dry open plain. The attack was so sudden, so terrible and so unexpected that the Indians had no time for defense. Their camp and ponies and many of the women and children were captured. Tall Bull and sixty of his warriors were killed. In the village lay the body of Mrs. Alderdice, a white woman captured in the Kansas settlements some months before. The squaws had found time in the hurry of their flight, to beat out her brains with rocks, and to strangle her babe who lay near by. Not far off was Mrs. Weichel, another white woman, shot through the body, but still living. These poor creatures who had seen their husbands butchered, their homes destroyed and themselves subjected to every human misery, were now struck down while the shouts of their deliverers were ringing in their ears. Mrs. Weichel finally recovered and married the hospital steward of the expedition, who had tended her through her sufferings.

In these campaigns William F. Cody acted as chief guide and scout and first distinguished himself. For this battle the regiment received the congratulations of the various military commanders and the thanks of the Legislature of Nebraska. It ended Indian terrorism in two States for many years. The regiment occupied stations in Wyoming and Nebraska, and, after more scouting and some fighting, was ordered to distant service beyond the great divide.

And now the scene changes swiftly over rail and water, from high rolling prairie, of buffalo grass, cactus, sage bush, where the buffalo, antelope and prairie dog have their home, to Arizona. There a high plateau and a low plain had been jammed together in some monstrous battle of nature and left a ragged mass of mountain and cañon in wild confusion. There is no rougher bit of country on the continent. Here the Apache made his den, centuries ago, and from here he raided the more peaceful peoples of upland and lowland, far and near. Secure in a stronghold that seemed impregnable, he turned his hand against every other living thing and grew more and more like an animal in his wants and desires. The presence of a few troops had encouraged small settlements, but outside the half dozen large towns and a few posts no man's life or property was safe. The rascality of the savages was encouraged by the attempts of philanthropists to make a peaceful solution of the problem, while the godless Apache laughed at the fool of a white man, fattened his squaws and papposes at the agencies and sought pastime in getting drunk on tizwin, and killing greasers or white men and stealing their stock. So things went on from the days of Cortez, and the Lord only knows how long before, until General George Crook, lieutenant-colonel of infantry, went to command the Department of Arizona. He obtained permission to compel the Indians to stay on their reserves, and, when they left, to follow and kill them. To do this, troops were put at the agencies, the Indians were counted at stated times and they were hired to track and pursue each other. The Fifth Cavalry arrived in time and was so disposed as to be the general's most important instrument in accomplishing his work. In September, 1872, he reported a list of fifty-four outrages committed in a year, not by any means a complete list, but only such as he was willing to vouch for. One of these affairs affords a fair sample of the lot. Lieutenant Reid T. Stewart, while travelling on a buck-board with a soldier driver was ambushed in Davidson's Cañon and killed. The driver was pursued, captured and tortured to death with lances and knives, —a fate which Stewart himself probably escaped by being killed at the first fire.

Shortly after this affair General Crook's campaign commenced in earnest. Bodies of troops swept over the infested district as with a broom. Major Mason with three troops jumped four rancherias at Muchos Cañons in the Santa Maria mountains and killed forty warriors. Major Brown with three troops, struck the chief Apache stronghold at the caves in Salt River Cañon and killed fifty-seven warriors. Troop "A" with another command fought two engagements at Turrit Mountain, where thirty-six bucks were slain. Lieutenant Michler with "K" Troop corralled a war party on Tonto Creek and killed seventeen warriors. There were many smaller

engagements and on the 7th of April, the department commander announced the first peace to the Territory of Arizona. Twenty-five hundred hostiles returned to their reserves, not concealing their hatred of the whites, but confessing their terror of the troops. The real force of Apache resistance was indeed broken but there were many bands of defiant renegades to be punished. In May, Lieutenant Almy lost his life at San Carlos as a result of an extensive conspiracy there, and probably two-thirds of the fighting and scouting was yet to come. In October, General Crook was promoted a brigadier-general for his services in these campaigns. Unfortunately the Chiricahuas were exempt from his jurisdiction just as their turn came to receive their lesson, and thus the bloody wars of some years afterwards were not prevented. Out of ninety-seven affairs of the Fifth Cavalry in Arizona there are only at my hand official statements of losses on thirty-three occasions: In these there were five hundred and ninety-nine Indian warriors killed, and many hundred captured, and of necessity these figures could only give the minimum loss sustained. These results were reached by the hardest kind of work. "The officers and men worked day and night, and with our Indian allies, would crawl upon their hands and knees for long distances over terrible cañons and precipices where the slightest miss-step would have resulted in instant death, in order that when daylight came they might attack their enemy and secure the advantage of surprise so indispensable in this kind of warfare. In almost every instance they did this with most complete success, almost invariably surprising the Indians and never giving them a chance to rally. There is hardly a space of ten miles square, in the country operated over, that has not some terrible lava-bed, or precipitous cañon with fortified caves, which the Indians could have held against all odds and with terrible loss of life had the enemy been approached in daylight, and assailed when they were on the alert."

General Schofield thanked the troops officially for their "extraordinary service," and General William T. Sherman said that "the services of the Fifth Cavalry in Arizona were unequalled by that of any cavalry regiment during the War of the Rebellion."

Then came the overland march to Kansas in 1875, and brief service there, which though fairly active, afforded no prospect of any serious work, until the great Sioux war in the north assumed alarming proportions. Early in 1876 it became evident that the troops in the field were not strong enough to cope with the hostiles. In the light of subsequent events this may have been owing to the fact that the troops of two departments were in the field under two generals instead of one. At any rate the regiment soon found itself, still led by General Carr, moved rapidly to the north, to serve again in the Department of the Platte, which it had left such a short time before.

Gen. William H. Emory had just been retired, and on the first day of July, on the South Cheyenne River, the regiment hailed its new colonel, Gen. Wesley Merritt, its former brigade and division commander in famous Virginia days. Then up and away to the fight on the War Bonnet, and the chase of the surprised Cheyennes into their agency, and the hurried march to join Crook's command on Goose Creek. No need to tell again of such recent and oft-told events as those which follow,—of the meet on the Rose-

bud, Custer's trail, the fight at Slim Buttes, the "mud march," "six months without a dime," rations of Indian pony and putrid dried buffalo. In the year most of the troops marched over two thousand miles; ninety-three of our horses died of exhaustion and starvation between Heart River and the Belle Fourche during one week in September. General Crook's tired battalions reached civilization again, after many privations, and although they did not destroy the enemy, they caused him to break and scatter, so that he never again made a formidable resistance. Gordon's battalion returned during the winter from the fight with Cheyennes at Bates Creek, and soon Sitting Bull was across the border, Crazy Horse was dead, and Dull Knife's hard fighting band was destroyed. General Crook had secured peace for his Department.

Short work of tailor and barber, with drills, feed and grooming, soon made another smart regiment. Several active seasons followed, with summers and winters in Idaho after Bannocks; in the Sand Hills of Nebraska after Cheyennes; on the Stinking Water trying to hit a last blow at the Nez Percé's; along the flanks of the Big Horns, patrolling the old hunting grounds of the Sioux; at Omaha and Chicago during the railway riots. These occupations, mingled with well remembered days of song and dance at Fort D. A. Russell, took up the time until the winter of 1879.

One frosty morning of October, news came that Major Thornburgh's command, consisting mostly of our own people, had been roughly handled by Utes in Colorado. It takes little time to put well-equipped troops in the field, so in a few hours a command of cavalry and infantry had made the journey by rail, and were at Rawlins, Wyoming, with all details complete, ready to push on to the relief of the besieged troops and the agency beyond.

The Utes were a powerful tribe, divided among several agencies in Colorado and Utah. They had been at peace with the whites for many years, but were known to be proud and warlike. If the entire nation had joined in this uprising, and gathered recruits, as Indians always do, among the ambitious youth of all other tribes, there was prospect of some heavy work. A month later over three thousand men were in the field against these Indians. The first troops that gathered at Rawlins, consisted of four troops of cavalry and several companies of infantry,—in all about three hundred and fifty men—while the besieged force amounted to nearly half that number. To have waited under such circumstances, until more of the hurrying troops had arrived, would have been fairly prudent, and justified by all recent experience. On the other hand was the pressing danger of the troops on Milk Creek, with one-third of their number killed and wounded, and the only surgeon wounded. No doubts disturbed the serene mind of the officer in command. With entire singleness of purpose, and no thought except for the immediate danger of the besieged troops, he gathered together such force as he could, packed his infantry in some country wagons, and plunged into the one hundred and sixty odd miles of mountain and wilderness that lay between the railroad and the scene of the recent disaster. The march was made in two days and a part of a third, and considering circumstances of time, distance, and good condition of men and horses at the end, it was a remarkable instance of the forced march of a well-conducted command.



It was an exciting ride, the last night particularly, as we forged on through the mountains, expecting every moment to find our slaughtered comrades or to hear the crack of the rifles of Utes in our way. Now the road ran along the edge of a precipice whose black shadows concealed many hundred feet of chasm, where some of the huddling pack-mules slipped and were never seen again; it widens out a little where naked bodies of dead teamsters are shining in the moonlight; two brothers met there, one riding with our advance, the other lying in the trail, with one stiff arm raised as if to grasp your horse's bridle as he jumped aside. Then on until mountains are past, and the guide tells us each moment that we are near the spot. That guide's indecision is exasperating, but at last we get there. There is a challenge and a bugle call, and General Merritt and his headquarter party ride for the rifle-pits at a dead run. Small time for hand-shakings then, for although the Indians have made no attack, the morning sun soon rises and shows them about a mile away, massing as if to defend the entrance to Yellow Jacket Pass, where they had driven Thornburgh back before. There was skirmishing in the morning and the Indians hurried away, leaving the troops to find their dead and care for the wounded. The agency was a short march beyond; on the road were more swollen and distorted bodies of dead civilians, and seven more at the agency, with pigs and fowls and carrion birds feeding on their flesh. The Indians showed their contempt of Meeker's ideas about planting corn, by driving a wooden peg down his throat, apparently while he was alive, and by dragging him, with a chain around his neck, up and down in front of his house. The women were carried away.

After all this, and the massacre of some more of our own people, it may well be believed that the command was in a frame of mind to start on a Ute hunting trip, and submitted with bad grace to the suspension of hostilities ordered at the request of the Interior Department. The troops went back to White River, and dug holes in the ground and lay there, until Ute Jack, wearing poor old Cherry's spike-tailed coat, with Colorao and Johnson, and their precious gang, went to Washington and talked pleasantly of how they had ravished the women and butchered the men, and the Ute war of 1879 was ended.

That was the last Indian campaign, although there have been several big scares, notably in Indian Territory, in 1885, when the Cheyennes became excited over the murder of an Indian by a white man, and were quieted by the good management of General Sheridan.

The season of rest from Indian wars afforded opportunity for instruction of larger bodies of troops than are ordinarily collected in our country. In the fall of 1888, Colonel James F. Wade organized a camp of instruction for the regiment at Camp Rockwell, and again in 1889 at Camp Schofield the same plan was pursued on a larger scale. Two regiments of cavalry, three batteries of light artillery, and sufficient infantry to represent a brigade, in a hypothetical military situation, went into camp upon Chilocco Creek in the Cherokee Strip. The formations for attacks and defense, the dispositions for security and information, and the operations of hostile contact, were practised in accord with proper military principles. After about three



weeks of most instructive work the troops departed for their posts, filled with enthusiasm and interest in the subject.

Here and there the record shows a feat of surpassing valor, as when First Sergeant John W. Spangler killed six Indians in a single encounter. He won the honorable mention of his department commander, and died a captain of cavalry. Another hero, less fortunate, because he fought on the wrong side, was a nameless Comanche Indian. To cover the flight of his squaws and papposes and friends, he dismounted in the way of the charging troops, and like Horatius of old he held them at bay. He wounded Major George H. Thomas and five enlisted men, one mortally, before he fell, pierced by a score of wounds. Perhaps his conquered race may keep his memory still in song and story, but the annals of the victor do not even give his name. Brief mention only may be made of the way John B. Hood showed the stuff he was made of, in the very first revolver charge fighting four times his number of savages, and killing more of them than he had men in his command; how Harrison, with thirty men, charged a brigade of cavalry to save his pickets; how the Greys went through Fairfax.

Not all of war is made up of death and suffering; where the good soldier rides there are acts of mercy found, and deeds worthy of any day of chivalry. We might tell the story of a trooper who once saved an Indian baby from the wild destruction of an Apache rancheria by Indian allies, shared his blanket at night with the mewling little savage, and carried it many hard miles by day until he could turn it over to its own tribe. Again, did Ash ride out and draw the fire of a brigade so that he might tell a straight story of their numbers? That was war too, but the delighted yells of the enemy when each man of them had fired and missed gave a dash of kindness to war's grim visage after all. Or again, when a village was taken, rich with plunder of the wide border, did not the soft-hearted cavalymen get together nine hundred dollars that were found there, and give them to the wretched white woman whom the Indians had left for dead?

The history of our regiment is the plain story of an average cavalry regiment in our army for thirty-five years. It has wandered much, and in many scenes of civil strife, riot, and border war its guidons have been found. Its graves mark the spots where civilization has advanced and where disunion has been made impossible. No argument, save its simple record, is needed to expose the fallacy of the speeches of Senators Houston, Benton, Doolittle and others, which contain a fair sample of the views of the enemies of the Regular Army.

Recent years have been years of peace, but the regiment's arms have not been "rusted in a vile repose." Least glorious and most disagreeable of all its duty has been that of enforcing the laws in the Indian country, guarding an empire of land against our poor and needy citizens who have ever trespassed on that forbidden ground. This duty has been gently and well performed. The soldier is nowhere more respected than in the land of home-seekers and boomers. To him all men have turned in days of disorganization and danger, and on the opening of Oklahoma, where much corruption was supposed to exist, no scandal attached to the United States troops. Perhaps this fact may deserve a place beside more gaudy laurels won at Wichita Village, at Gaines' Mill, or at Summit Springs.

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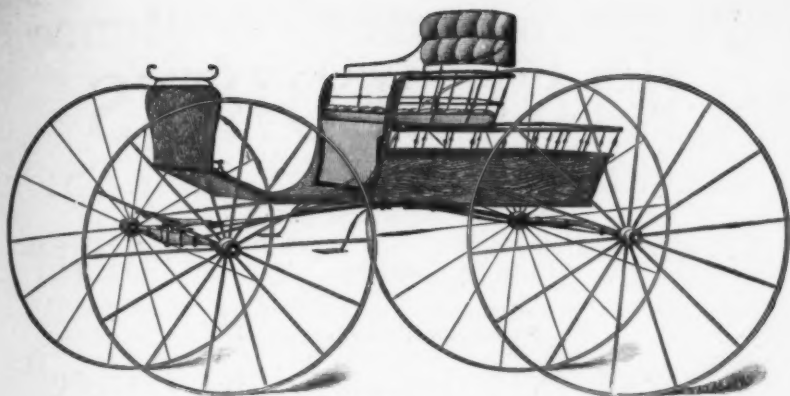
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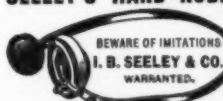
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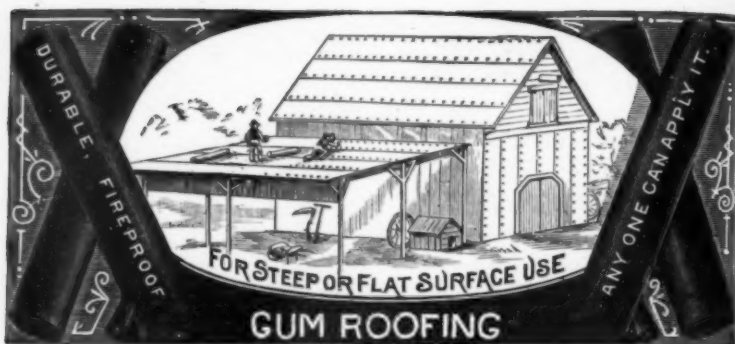
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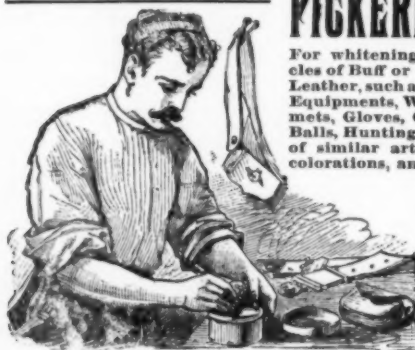


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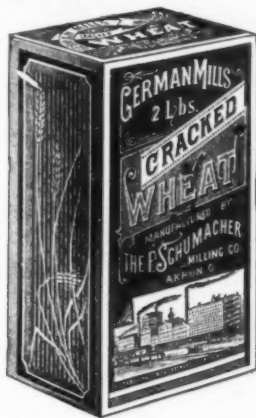
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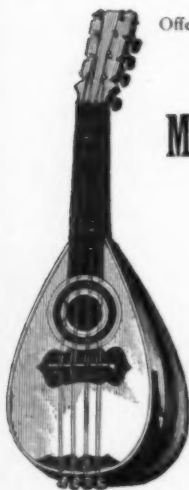
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